NOVEMBER 15, 1951

MODERN MEDICINE

The Journal of Diagnosis and Treatment

SYMPOSIUM ON GYNECOLOGY

Dr. Emil Novak *(see page 11)*

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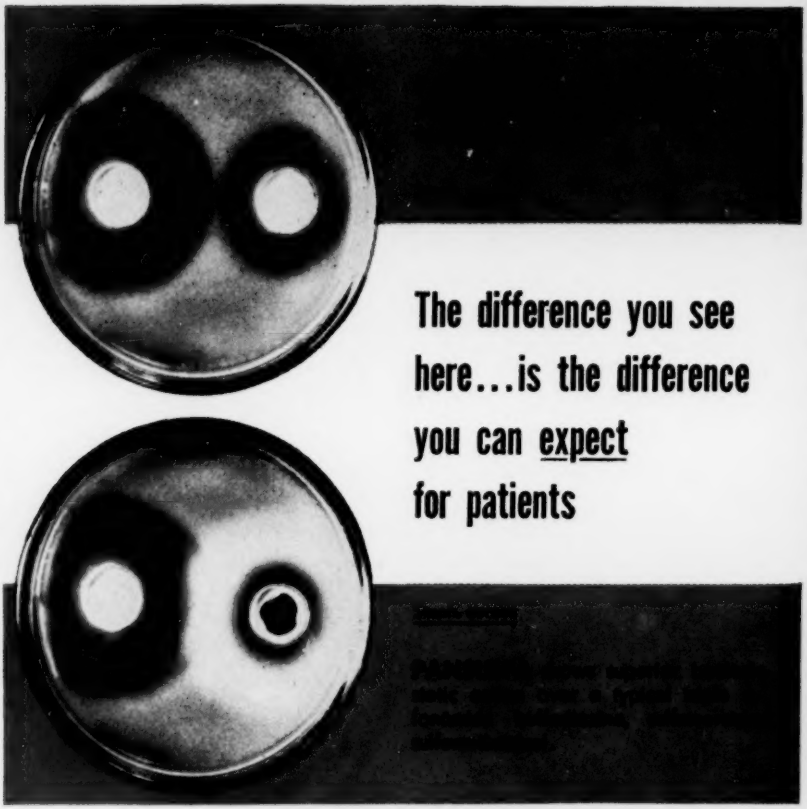

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*See Lehr, D., N. Y. St. J. Med. 11:1361, 1950

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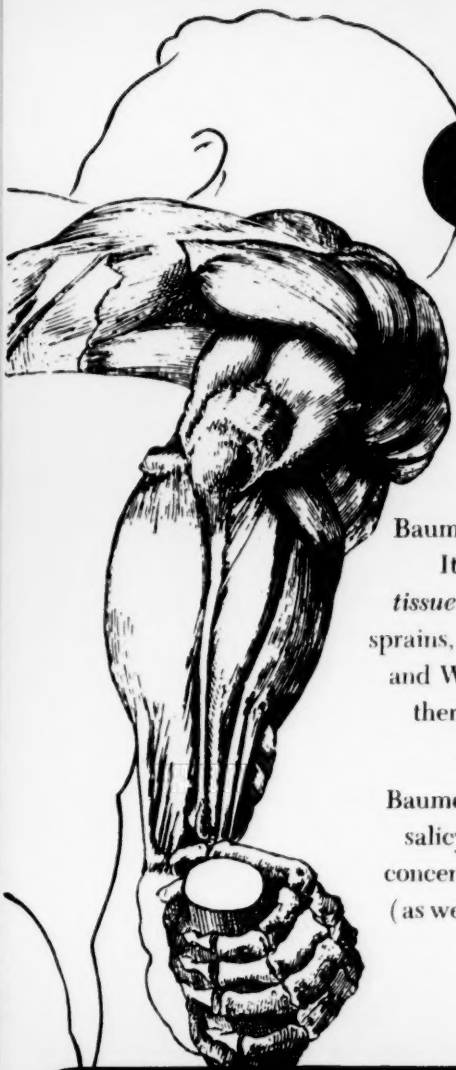

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ANALGESIC

1. Lange, K., and Weiner, D.: J. Invest. Dermat. 12:263 (May) 1949.

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MODERN MEDICINE

THE JOURNAL OF DIAGNOSIS AND TREATMENT

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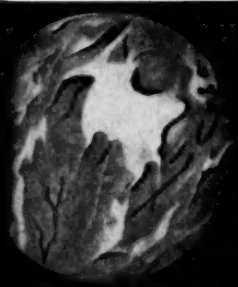

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[1] Hardt and Steigmann: *American Jour Digestive Diseases*; June, 1950.

[2] From the film *The Role of Gastrosc the Diagnosis and Treatment of C Pathology* by Dr. Leo L. Hardt, C Professor of Medicine, Loyola Univ Medical School, Chicago.

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for
November 15
1951

Modern Medicine
Vol 19, No. 22

THE MAN ON THE COVER is Dr. Emil Novak, Assistant Professor of Gynecology at Johns Hopkins University, Associate Professor of Obstetrics at the University of Maryland, and Gynecologist-in-Chief at Bon Secours and St. Agnes hospitals, Baltimore. President of the American Gynecological Society and a past chairman of the Section on Obstetrics and Gynecology of the American Medical Association, Dr. Novak is an honorary fellow of medical societies in the United States, Argentina, and Hungary. He has written over 300 articles for medical journals and is author of several books, including *Textbook on Gynecology* and *Gynecological and Obstetrical Pathology*. Dr. Novak's contribution to the Symposium on Gynecology, "Reflections on Endocrine Menopausal Therapy," appears on page 75.

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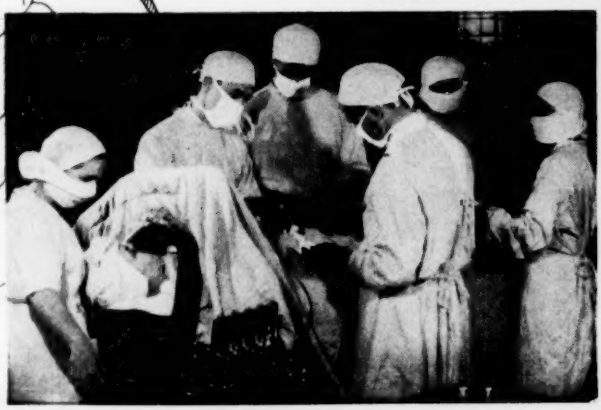

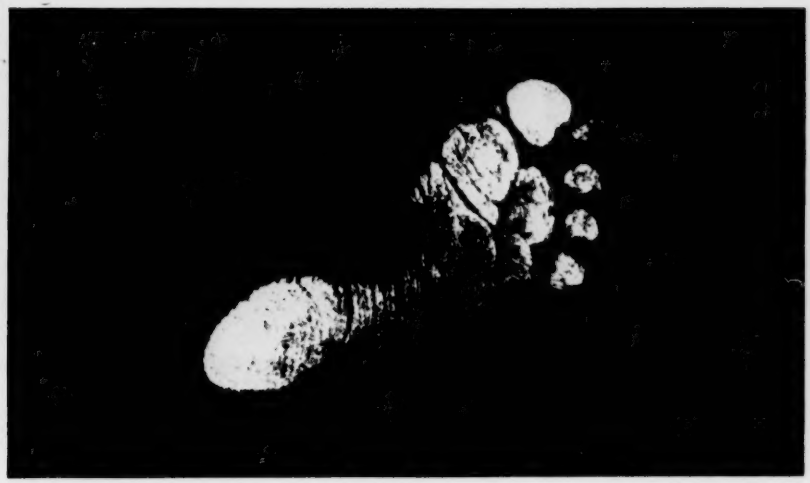

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LETTER FROM THE EDITOR

Dear Reader:

I have been looking over the first proofs of the *Modern Medicine Annual* for 1952 and am impressed anew with the tremendous amount of clinical information the book will contain—intensely practical material that all of us should know or at least have at hand to turn to when the occasion arises.

Common-sense suggestions are made for meeting common problems. For instance: What to do when a child refuses to eat? How to choose between the various digitalis preparations? How do the enzymes—hyaluronidase, streptokinase, and streptodornase—fit into the therapeutic picture? The answers, as far as they are now known, are in this splendid book.

Obviously it is impossible to list every article that the volume contains. Special mention should be made, however, of the two symposia edited by Dr. William J. Dieckmann of the University of Chicago, one on obstetric problems and the other on gynecologic conditions. Doctor Dieckmann had outstanding men from all over the United States contribute papers describing their methods of treatment. These symposia are invaluable to the man who wants to benefit from the experiences of recognized authorities in the fields of obstetrics and gynecology. A third symposium, edited by Dr. Arild E. Hansen of the University of Texas, presents in clear and readable fashion what can be done about the problem of rheumatic fever.

Numerous special articles also enhance the value of the *Annual*, particularly the series on drug therapy which discuss, in the clinician's language, the potentialities and limitations of old and new agents in the treatment of disease.

The publishers tell me that because of the enormous expense of producing the volume, the print order is going to correspond roughly to the number of pre-publication orders received. If you could have a chance to see the advance proofs as I have, I am sure you would want this book.

Walter C. Alvarez

EDITOR-IN-CHIEF

Correspondence

Communications from the readers of MODERN MEDICINE *are always welcome. Address communications to The Editors of* MODERN MEDICINE, *84 South 10th St., Minneapolis 3, Minn.*

Simplest Guide

TO THE EDITORS: *Modern Medicine* recently published discussions regarding prothrombin time and prothrombin determinations (June 15, 1951, p. 50; Sept. 15, 1951, p. 28). Many of the inaccuracies are due to poor technic and lack of a clear reading of articles. One of these is the interpretation of seconds or percentage. This question was fully answered in the *Journal of the American Medical Association* (136:418, 1948).

A curve for abnormal blood does not parallel the curve of the normal. The curves are asymptotic rather than parabolic and become straight only if the recording is the log-log of the time. The reading is in seconds and the reading of a control is in seconds. No graph is needed by the physician.

The simplest guide, as has been repeatedly stated, is to report in seconds and use double the normal as the level at which neither hemorrhage nor thrombosis will occur. Many use diluted (12.5%) prothrombin time. Here the guide is 3 times the normal. This is far more accurate than stating "between 10% and 30%, preferably about 20%."

CHRISTIAN P. SEGARD, M.D.
Leonia, N. J.

Occiput Posterior Maneuver

TO THE EDITORS: Approximately 10% of vertex presentations will engage and descend with the occiput posterior. Delivery can be spontaneous from this position but, due to the opposing curvatures of the birth canal and fetal head, is usually prolonged, more painful and more likely to cause extensive perineal tears, and may jam if the occiput rotates into the hollow of the maternal sacrum.

The occiput posterior position should be suspected when [1] the fetal back is difficult to identify in the maternal abdomen, [2] the fetal heart tones are faint, [3] the fetal head is not well engaged at the onset of labor, and [4] labor is prolonged. Occipitoposterior position may be confirmed by roentgenograms. At the same time, pelvic measurements can be checked and cephalopelvic disproportion ruled out.

A maneuver has been used to correct the occipitoposterior position repeatedly without failure.

At any stage of labor when the occipitoposterior position is found or suspected, the patient is placed in the hands-and-knees position in bed and encouraged to let the abdomen relax. This will be impossible during the actual labor contraction so the position should be maintained

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through several consecutive contractions and intervening rest periods. The fetus will drop into the dependent abdomen of the mother; its heaviest part, the back, will seek the most dependent position—against the mother's abdominal wall. The baby's weight is ample to withdraw even a deeply-engaged head.

Completion of the rotation can be verified by palpation of the fetal back and by auscultation of the fetal heart. When rotation has occurred, the patient lowers her hips to a sitting position to permit the head to reengage in an occipitoanterior position. The supine position should be avoided until this has occurred.

After reengagement of the head, delivery is likely to be rapid, if the first stage was complete or nearly so when the maneuver was carried out.

Report of a case:

A white primipara, age 17, at term, went into labor spontaneously at 7 A.M. Mar. 30, 1950. Her prenatal visit of March 6 had shown the fetus in left occipitoanterior position and a fetal heart rate of 144. At 11:30 P.M. the same day she was found completely dilated, having strong sixty-second contractions every two minutes, and had made no progress for two hours.

A roentgenogram at this time showed the fetus in left occipitoposterior position with normal pelvic and fetal head measurements.

The patient was placed in hands-and-knees position for about fifteen minutes during which time the fetus dropped into the dependent abdomen and rotated to the back dependent, occipitoanterior position.

When a sitting position was assumed the occiput promptly reengaged and, after a short time, presented at the outlet in a right occipitoanterior position from which the patient was delivered of a normal 8-lb. 2-oz. female.

Comment of the readers is invited.

H. C. CARPENTER, M.D.

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Therapy of Hunner's Ulcer

TO THE EDITORS: Hunner's ulcer is a painful and intractable condition, but so rare that most of us see only an occasional case.

Having seen the rapid diffusing effect of hyaluronidase in hypodermoclysis, I have wondered if it might promote the healing of these ulcers by relaxing the contracted tissues in and about them. It could be easily injected through the McCarthy needle, passed through the panendoscope.

As the large clinics have a greater opportunity of seeing cases of Hunner's ulcer, in May 1951 I suggested to my friend Dr. George Gilbert Smith of Massachusetts General Hospital that he give hyaluronidase a trial. To date he has made no report on its use.

An article by Dr. Milton Ende in the July issue of the *Southern Medical Journal* described successful use of hyaluronidase in the treatment of 3 chronic leg ulcers. Dr. Ende simply applied dressings of 400 viscosity units of hyaluronidase dissolved in 1 cc. of water. The ulcers healed completely in a short time.

This prompts me to bring the suggestion to the attention of urologists in the hope that hyaluronidase will be tried and proved effective in Hunner's ulcers.

GEORGE R. LIVERMORE, M.D.
Memphis

Favorite Magazine

TO THE EDITORS: *Modern Medicine* is our favorite magazine for the General Practitioner.

AUGUSTE FALKENSTEIN, M.D.
New York City

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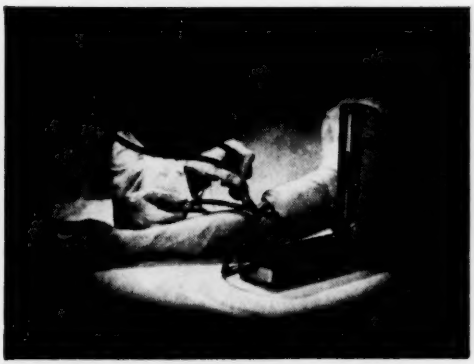

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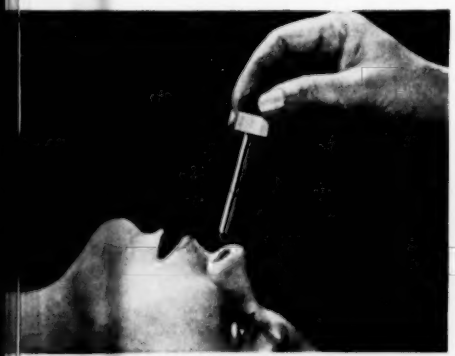

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*Thornell, W. C.: Arch. Otolaryng. 52:96 (July) 1950.

Literature on request

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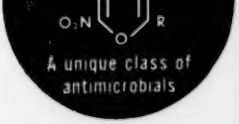

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1. Myersen, A. J. Nerv. and Ment. Dis. 105:598 (June) 1947.
2. Barnett, S. E.: Eye, Ear, Nose and Throat Monthly 29:19 (January) 1950.
3. Schulte, J. W., Reit, E. C., Bacher, J. A. Jr., Lawrence, W. S. and Tainter, M. D.: J. Pharmacol. and Exper. Therap. 71:62-74 (Jan.) 1941.
4. Lootbourow, D., and Palmer, R. S.: M. Clin. North America. 33:1209 (September) 1949.
5. Gelvin, E. P., and McGavack, T. H.: New York State J. Med. 49:279 (Feb. 1) 1949.

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Questions & Answers

All questions received will be answered by letter directed to the petitioner; questions chosen for publication will appear with the physician's name deleted. Address all inquiries to the Editorial Department, MODERN MEDICINE, *84 South Tenth Street, Minneapolis 3, Minnesota.*

QUESTION: What is the latest information on the management of varicose ulcers?

M.D., Kansas

ANSWER: *By Consultant in Surgery.* The treatment of varicose ulcers depends upon the underlying etiologic factors. If the venous stasis results from a faulty saphenous system, therapy can consist of a high ligation with a retrograde injection of sclerosing solution or a high ligation with subsequent injections of the varicose veins.

In cases of severe involvement, multiple ligation may be necessary to secure the interruption of the saphenous veins. In selected cases, the diseased saphenous veins can be interrupted by a stripping operation. The vein should be removed from the saphenofemoral junction to the tip of the medial malleolus. Treatment should be directed to the lesser saphenous vein at the same time. Usually the lesser saphenous vein is diseased and contributes to the stasis ulcer.

The treatment of ulceration in the postphlebitic leg should be directed toward the diseased femoral vein system. Ligation of the superficial femoral vein prevents the backflow down the vein and the circulatory stasis. In pronounced involvement of the femoral vein, a retrograde phlebogram may show that a popliteal vein ligation is required to correct the stasis in the lower leg.

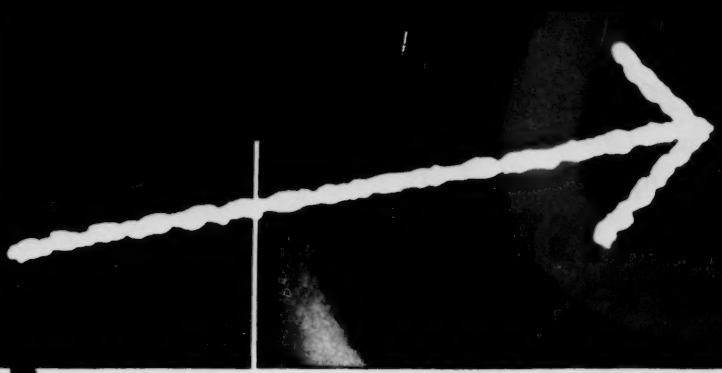
With the stasis corrected, in some chronic indurated ulcers, the involved area may need to be excised and a skin graft placed. This procedure will shorten the healing time.

The involved leg should have supportive therapy after the definitive treatment. Elastic bandage, elastic stocking, or elastic adhesive is applied from the toes to the groin and ambulation started the day after operation. The patient should return regularly for observation for several months or years so that new varicosities may be treated or interrupted.

QUESTION: Is testosterone contraindicated for a man of 50 with essential hypertension 170/120?

M.D., Arizona

ANSWER: *By Consultant in Internal Medicine.* Testosterone is probably not contraindicated for a man of 50 with hypertension. Testosterone does not ordinarily have any pressor effect. Edema fluid may be retained in a patient with borderline cardiac reserve, but this is not serious, because fluid so retained disappears when the testosterone is stopped.



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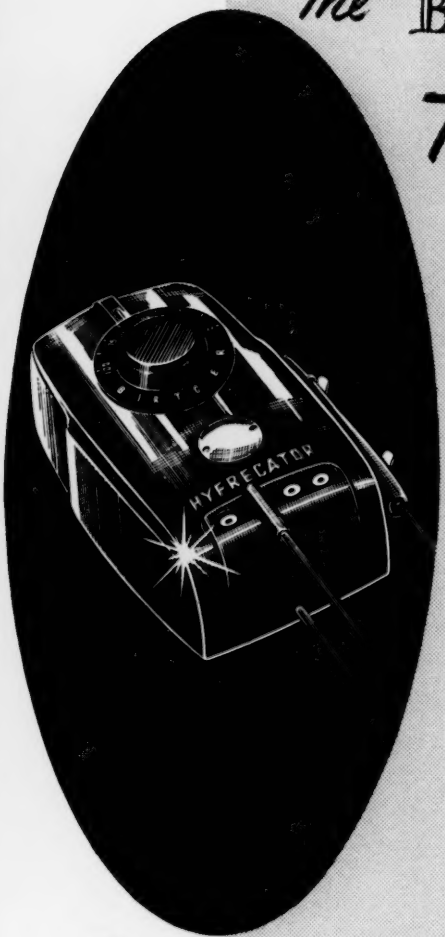

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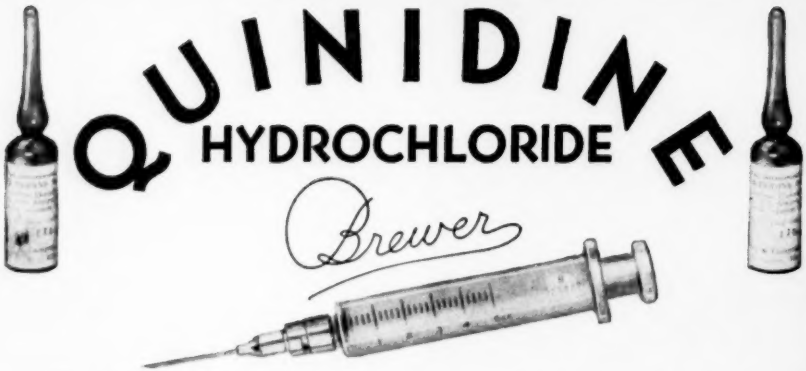

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PROBLEM: If a workmen's compensation law does not specify that administrative authorities may require a disabled worker to submit to surgery, could an employee be required to have an operation for a ruptured intervertebral disk or lose compensation until consenting, there being no showing that the operation was not dangerous or that it would tend to a cure?

COURT'S ANSWER: No.

The Rhode Island Supreme Court said that an injured employee, like anyone else, has a natural right to determine whether he will submit to surgery and that the legislature intended to preserve *reasonable* exercise of that right. The court approvingly quoted from a decision of the Massachusetts Supreme Judicial Court, to the effect that an employee must submit to reasonable and standard remedies and operations if they are not dangerous and benefit is reasonably to be expected (82 Atl. 2d 390).

PROBLEM: Can courts justly and logically say that a hospital operated as a charity is immune from liability in damages for injury to, or death of, patients—as the courts in some states affirm and the courts of other states deny—and yet hold that a doctor is liable for neglect toward charity patients?

COURT'S ANSWER: No.

This was the answer given in an opinion of the U.S. District Court of Appeals, District of Columbia, filed June 1942, and written by the late Justice Rutledge before his elevation to the Supreme Court. But, by implication, the courts of states in which charity hospitals are granted immunity from liability find nothing inconsistent in holding physicians and surgeons liable for malpractice to charity patients.

Judge Rutledge left something to be thought about, if not debated, when he observed (130 Fed. 2d 810):

> When an individual human being undertakes not simply an isolated act, but a habit or business of charity, without incorporating or casting it in the form of a trust, he does not acquire immunity. Possibly half of medical service rendered today is charity practice. . . . Some physicians . . . spend half or more of long and useful careers ministering to the sick and troubled without pay. Many more do so habitually, but less extensively. Yet they do not have leave to be careless, notwithstanding their kindess is continuous or habitual rather than casual or occasional. Nor would they if it were conducted through or in association with others. Only when an individual institutionalizes his charitable enterprise formally, as by incorporation or possibly by creating a trust, does he succeed in casting the whole burden of its negligent operation on those it injures.
>
> It is a strange distinction, between a charitable institution and a charitable individual, relieving the one, holding the other, for like service and like lapse in like circumstances. The hospital may maim or kill the charity patient by negligence, yet the member of its medi-

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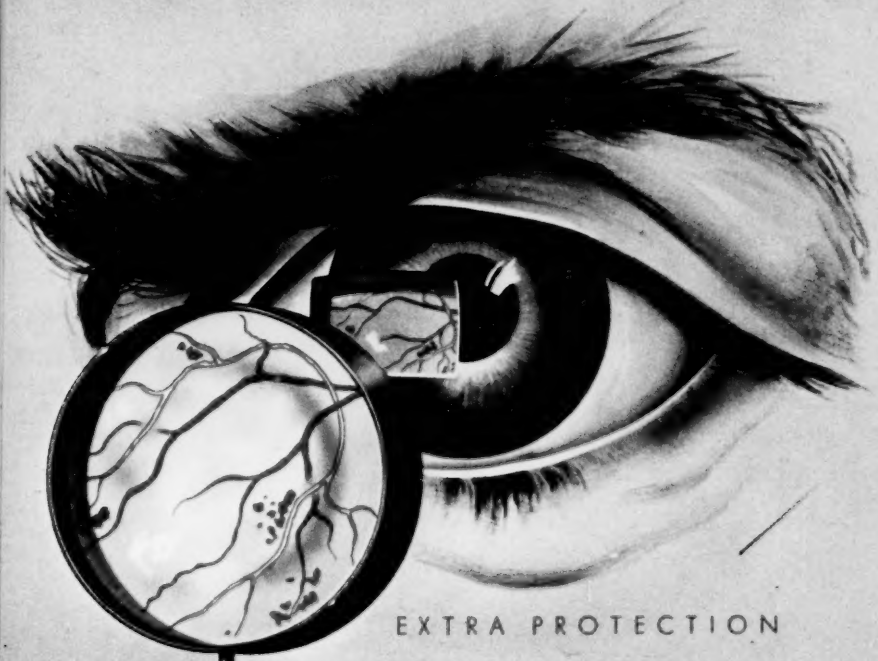

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PROBLEM: Was the lessee of a hospital liable to a patient for injury caused by excessive diathermy administered by the patient's own doctor and a nurse of the hospital under that doctor's direction?

COURT'S ANSWER: No.

The Oklahoma Supreme Court upheld a judgment dismissing the patient's suit for damages (233 Pac. 2d 963).

PROBLEM: In a Florida case, physicians were summoned to court 25 miles from home, were present when court convened at 9:30 in the morning, and were not excused until some undisclosed hour in the afternoon. Did the trial judge err in allowing each doctor $100 as witness fees?

COURT'S ANSWER: No.

So decided the Florida Supreme Court (53 So. 872).

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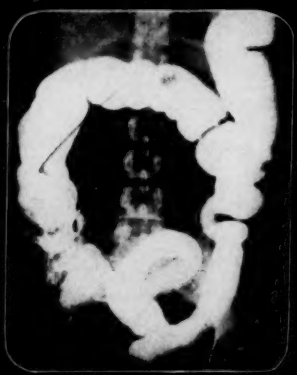

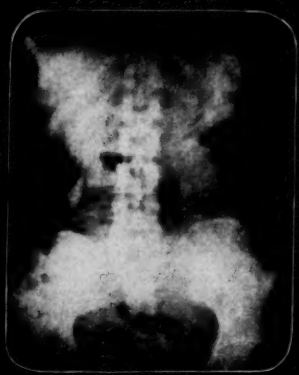

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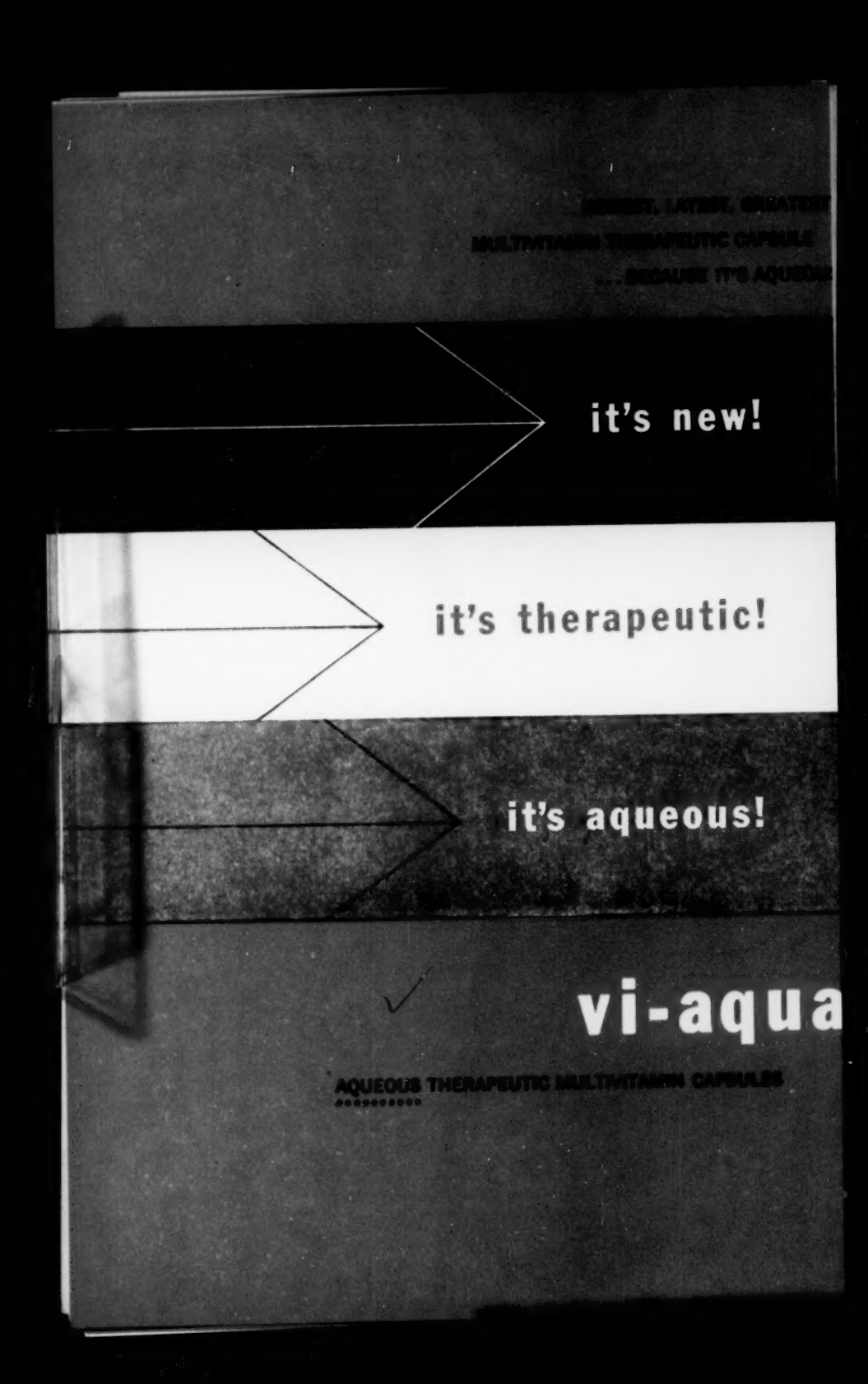
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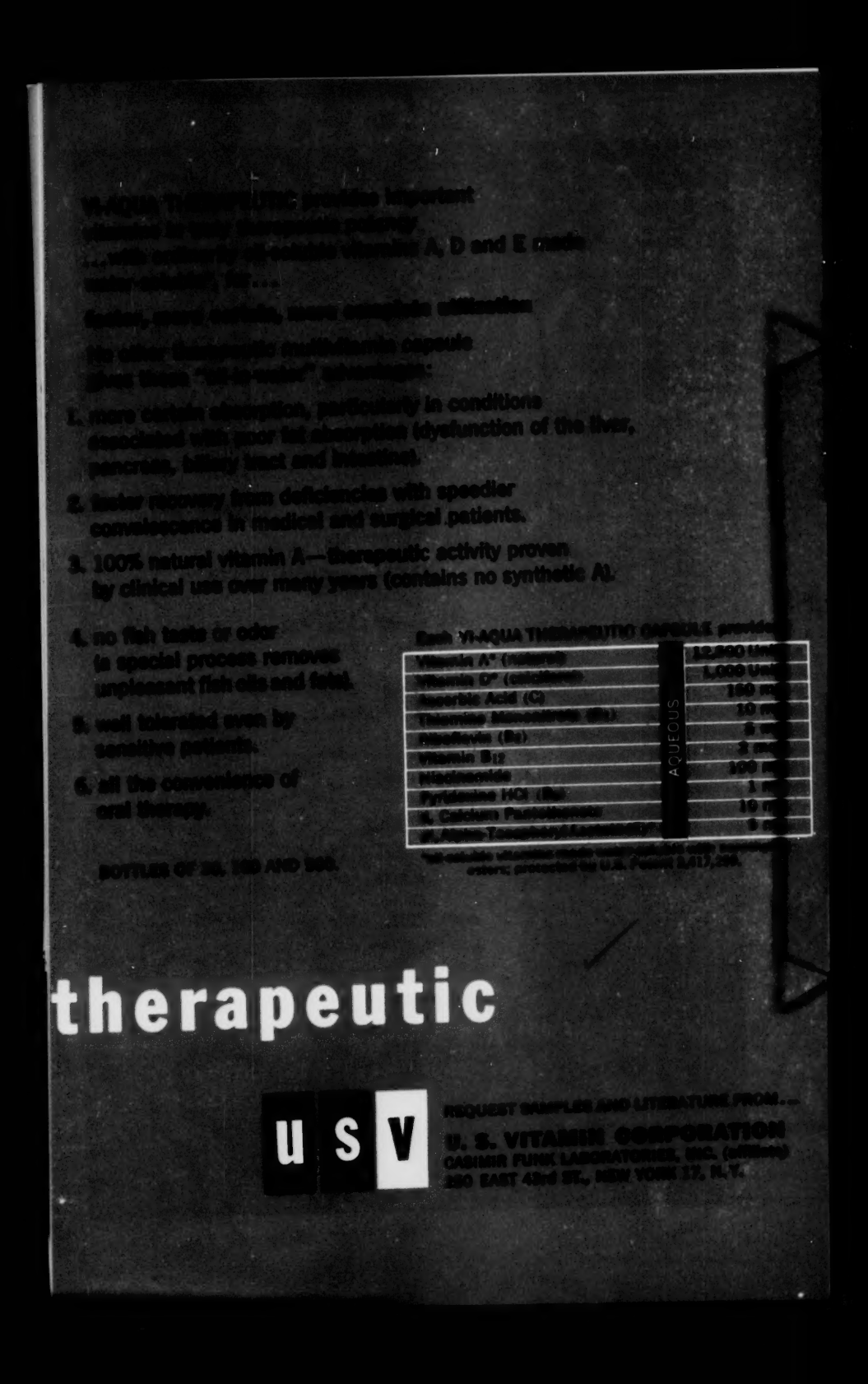
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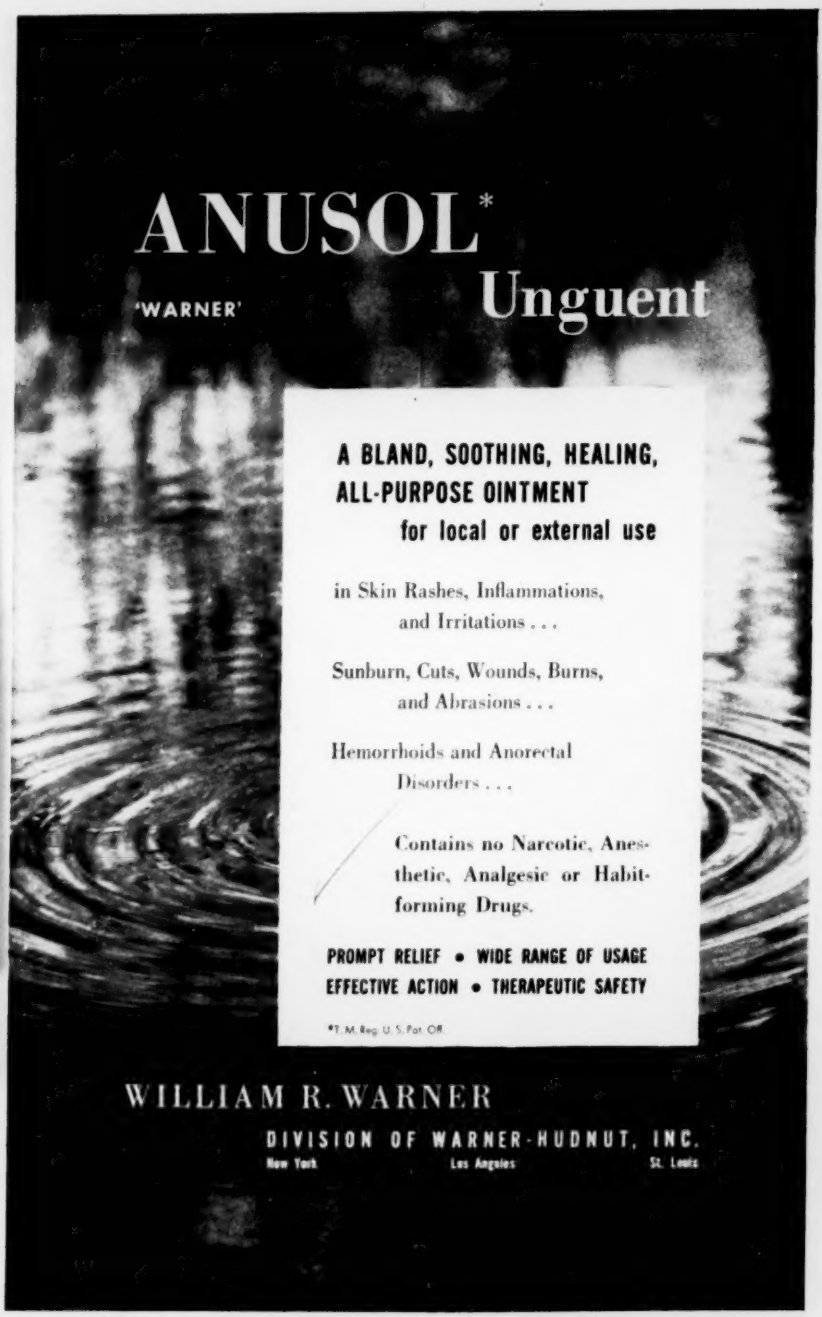
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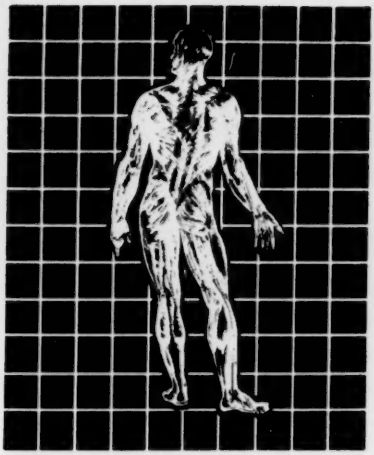

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SEBORRHEIC DERMATITIS	6	5	1	–
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**Lowenfish, F.P., N.Y. State J. Med., 50:922 (Apr. 1) 1950.*

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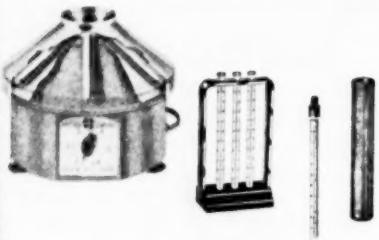

In the original technic for determining the blood sedimentation correction factor for the V.P.R.C. (volume packed red cells), Dr. M. M. Wintrobe, of the University of Utah School of Medicine, specified 30 minutes centrifuging at a speed of 3000 R.P.M. Since the efficiency of centrifuging varies directly with the radius of the swing and as the square of the speed, the variation in the radii of the swing on different types of centrifuges is an important factor.

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As a result of these tests, Dr. Cartwright states that this instrument is satisfactory for the doctor's office and adequate for determining V.P.R.C.

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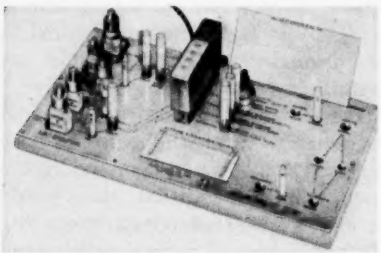

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Blood typing prior to transfusion places a grave and unique responsibility on the laboratory technician. Here is one laboratory routine where the physician is inclined to rely on the technician's findings. Usually, laboratory results are used as checks against case histories and physical findings.

Serological tests, however, stand alone. Negative results are as significant as positive; there are few inherent checks in the tests, and they are often performed under great pressure. This, plus the increasing complexity of crossmatching and agglutination tests in the past five years, has greatly increased the chances for human error. The technician who is entrusted with the laboratory tests related to blood transfusion must have a thorough training and understanding of the procedures.

The Brown Blood Grouping and Cross Matching Board was developed in the Blood Bank of Duke University to minimize these dangers. All routine procedures are indicated directly on the board. Each bottle and tube is of distinctive shape and fits into its own hole. All tubes and bottles bear permanent labels, with identifying colors, and the technician is compelled to complete typing and crossmatching of one sample before proceeding to the next.

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Clay-Adams animal-tested polyethylene tubing is practical for use as a gastric tube, particularly in premature and other infants where there is a defect in the sucking mechanism. Animal-tested polyethylene can be left in place for long periods of time without tissue reaction. It can also be used for tube feeding in adults. Because it has a non-wetting surface, polyethylene does not tend to clog.

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For Coupling the tubing to a syringe, a variety of Luer-lock couplers is available. The tubing is sealed securely in place by using a heat flare without cutting down the lumen of the tube. Animal-tested polyethylene tubing is available from Clay-Adams in 23 different sizes, from 0.011 to 0.50 inches inside diameter.

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Washington Letter

Senate Frowns on Incentive Pay in Medical Education Aid Bill

The Senate has made it unmistakably clear that it doesn't favor high incentive payments to induce medical schools to expand. There still is a great deal of sentiment for some sort of aid to medical, dental, and nursing education schools, but if such a bill is passed it almost certainly will take care of schools that don't expand much as well as those that mushroom. By overwhelming vote, the Senate rejected a plan to give schools approximately 10 times as large payments for "additional" students as for normal.

Under the plan, schools of medicine, dentistry, and nursing would receive only nominal amounts from the federal government for each student enrolled—on the average, less than one-fourth of teaching costs. However, incentive payments, federal grants for each student in excess of normal enrollment, would be greatly increased.

For example, under the original proposal, medical schools would have received $500 for every student on their rolls. In addition, they would receive an extra $500 for every student in excess of normal enrollment.

The Senate-rejected plan would cut basic payment per student to $200, but increase the incentive payment from $500 to $2,000, for a total federal contribution of $2,200 for every student in excess of normal enrollment.

The idea for overwhelming emphasis on expanding teaching facilities is not actually new. The plan originated with Sens. Richard Russell (D., Ga.) and Robert S. Kerr (D., Okla.), but not until very late in the session was it taken up seriously by the Senate Labor and Welfare Committee, which handles most health legislation.

This committee, impressed after a study of the proposal, approved the new schedule of pay-

"Read any good 'get well' cards lately?"

Complete and lasting relief to 90% of patients with nausea and vomiting of pregnancy

A recent clinical study[1] finds 'Dexedrine' remarkably effective in the treatment of the nausea and vomiting of pregnancy.

The author states:

1. "In a series of 165 patients with nausea and vomiting of pregnancy, 'Dexedrine' Sulfate produced complete relief in 148, or 90% . . . Marked improvement occurred in almost every case within three days . . . Complete relief occurred in four to ten days."

2. " 'Dexedrine' has definite advantages over other treatments, most important of which are the mental and physical alertness, and the general feeling of well-being which it produces."

The study concludes: 'Dexedrine' "usually gives prompt and lasting relief; it is effective orally; it produces no significant side effects; and it gives mental and physical stimulation which improves the patient's morale and enables her to carry on normal activities."

Smith, Kline & French Laboratories, Philadelphia

Dexedrine* tablets & elixir

the antidepressant of choice and the most effective drug for control of appetite in weight reduction

*T.M. Reg. U. S. Pat. Off.

1. Anspaugh, R.D.: Effects of Dexedrine Sulfate on Nausea and Vomiting of Pregnancy, Am. J. Obst. & Gynec. *60*:888 (Oct.) 1950.

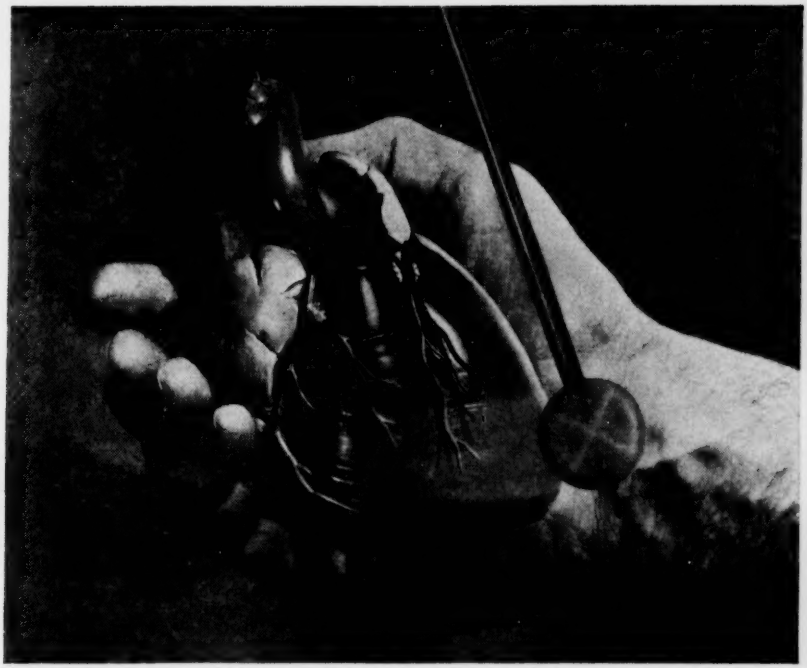
ments and sent it on to the Senate as a committee amendment, to replace the old schedule in the general aid to medical education bill, S.337. The committee had given S.337, with the old schedule of payments, a unanimous vote of approval more than ten months ago. But the Senate itself would have none of the "big bonus" idea. After rejecting the amendment, it proceeded to return S.337 itself to the committee.

Although the substantial increases in incentive payments make the new payments plan sound more expensive, Committee experts who have studied the situation say that, for the next five years at least, it would be less costly for the taxpayers. The great saving would be in reduced payments for all students—a drop of about 60% for all categories, dental students and nurses as well as medical students.

The committee staff believes that,

(Continued on page 54)

"Why of course I remember you Mr. Abbott? . . . Mr. Adams? . . . Mr. Axel? . . . Mr. Babson? . . . Brown? . . . Carter? . . . Denton? . . . Dunning? . . . Ellis? . . . Franklin?"



regulate cardiac output...more precisely

Digitaline Nativelle provides *positive maintenance*—positive because it is completely absorbed and uniformly dissipated. It affords full digitalis effect between doses. Since the non-absorbable glycosides, so frequently causing gastric distress, are eliminated, untoward side reactions are rare. Because of this efficiency Digitaline Nativelle is a cardiotonic of choice of leading cardiologists the world over. For the comfort and protection of your patients—for your own assurance—specify Digitaline Nativelle in full when you prescribe.

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Send for brochure:
"Modern Digitalis Therapy"
Varick Pharmacal Company, Inc.
(Division of E. Fougera & Co. Inc.)
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Chief active principle of digitalis purpurea (digitoxin)
(not an adventitious mixture of glycosides)

For dosage instructions consult Physicians' Desk Reference

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Management

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11 minerals
8 vitamins
all in one capsule

"judiciously

each capsule contains:

DEXTRO-AMPHETAMINE SULFATE	5 mg.
Vitamin A	5,000 USP Units
Vitamin D	400 USP Units
Thiamine HCl	2 mg.
Riboflavin	2 mg.
Pyridoxine HCl	0.5 mg.
Niacinamide	20 mg.
Ascorbic Acid	37.5 mg.
Pantothenate Ca	3 mg.
Calcium	242 mg.
Cobalt	0.1 mg.
Copper	1 mg.
Iodine	0.15 mg.
Iron	3.33 mg.
Manganese	0.33 mg.
Molybdenum	0.2 mg.
Magnesium	2 mg.
Phosphorus	187 mg.
Potassium	1.7 mg.
Zinc	0.4 mg.

J. B. ROERIG AND COMPANY • CHICAGO,

"The obese person's weight can be reduced by [illegible] to burn his own body fat. This is accomplished by curtailing the intake of food . . . judiciously and with regard to physiologic laws. Therefore, in restricting the food, precautions should be taken to guard against . . . mineral, vitamin deficiency . . . the distress of great hunger and profound weakness."

McLester, J. S.: Nutrition and Diet in Health and Disease, pp. 412-413, 1949.

and with regard to physiologic laws"

for sound obesity management

AM PLUS

regardless of the financial inducement of larger classes, the schools would not be able to build up staffs and facilities fast enough to profit much from the higher bonus payments; that material and personnel shortages would hold the schools to a steady but gradual growth.

The estimate is that for the full five years the per-student payments would total no more than $179,000,000 under the Kerr-Russell proposal, in contrast to $250,000,000 under the old schedule in S.337.

Whatever the merits of this plan, it won't be making much progress, not unless and until the Senate membership is greatly changed. Instead, emphasis next year will be on a plan along the original lines of S.337, which gives schools an incentive to enlarge, but "doesn't bribe them to do so," as one senator said during debate.

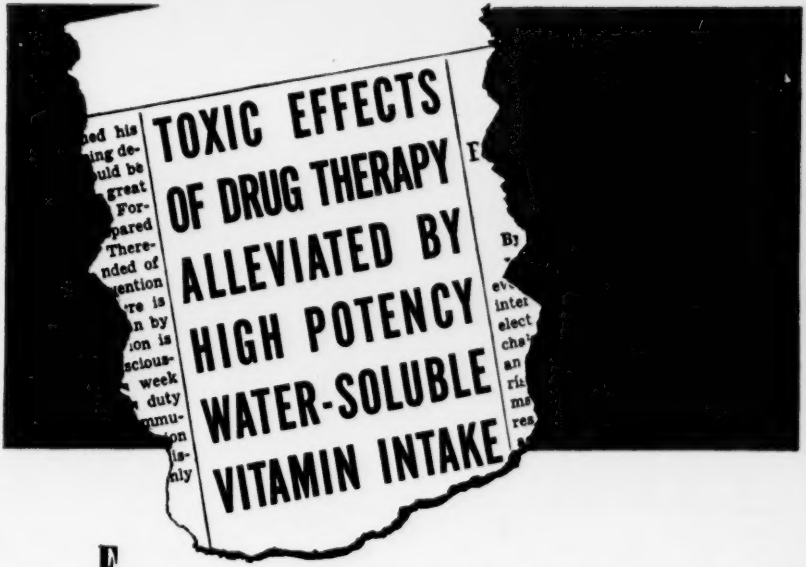
Medical Costs Nondeductable

Nothing came of it, but the Senate devoted an afternoon to debating whether taxpayers should be allowed to deduct their medical care costs from taxable income before figuring what they owe the federal government. The idea has long been favored by physicians, dentists, and others in the health fields. And, obviously, by most taxpayers who knew about it.

The figure to be saved by the taxpayers, and lost by the government, would be imposing. The latest government report shows that close to 9 billion dollars is spent annually for all medical care and health expenses, including hospital costs, drugs, dental fees, and so on.

Chairman Walter George of the Senate Finance Committee argued

(Continued on page 58)



Extensive clinical investigation has shown that drug therapy may precipitate vitamin deficiency and originate, increase or prolong toxic side-effects.

The effectiveness of high potency water-soluble vitamin therapy has been amply demonstrated in allaying the toxic side-effects of the sulfonamides, antibiotics,[1] stilbestrol, arsenicals and gold salts.[2,3] Drug tolerance is increased by the adjunctive administration of Provite 'B' with Vitamin C, or Provite 'B'.

NEW

Each Provite 'B' with Vitamin C capsule provides:	
Vitamin B_1 (Thiamine HCl)	25.0 mg.
Vitamin B_2 (Riboflavin)	12.5 mg.
Vitamin B_6 (Pyridoxine)	1.5 mg.
Calcium Pantothenate	5.0 mg.
Niacinamide	100.0 mg.
Vitamin B_{12} U.S.P.	2.0 mcg.
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Choline Dihydrogen Citrate	100.0 mg.
Inositol	50.0 mg.
Secondary Liver Fraction	60.0 mg.

Each Provite 'B' capsule provides:	
Vitamin B_1 (Thiamine HCl)	25.0 mg.
Vitamin B_2 (Riboflavin)	12.5 mg.
Vitamin B_6 (Pyridoxine)	1.5 mg.
Niacinamide	150.0 mg.
Choline Dihydrogen Citrate	100.0 mg.
Inositol	50.0 mg.
Calcium Pantothenate	5.0 mg.
Secondary Liver Fraction	q.s.
Dried Yeast	q.s.

1. Queries and Minor Notes, *J.A.M.A.* 144:1225 (Dec. 2) 1950.
2. McCormick, W. J.: Sulfonamide Sensitivity and C-Avitaminosis, *Can. M. S. J.* 52:68 (Jan.) 1945.
3. Karnaky, Karl John: The Use of B Complex and Vitamin C for the Prevention and Elimination of Nausea and Vomiting from Diethylstilbestrol, *Surgery, Gynecology and Obstetrics* 91:617 (Nov.) 1950.

Provite® 'B' with Vitamin C and Provite® 'B'

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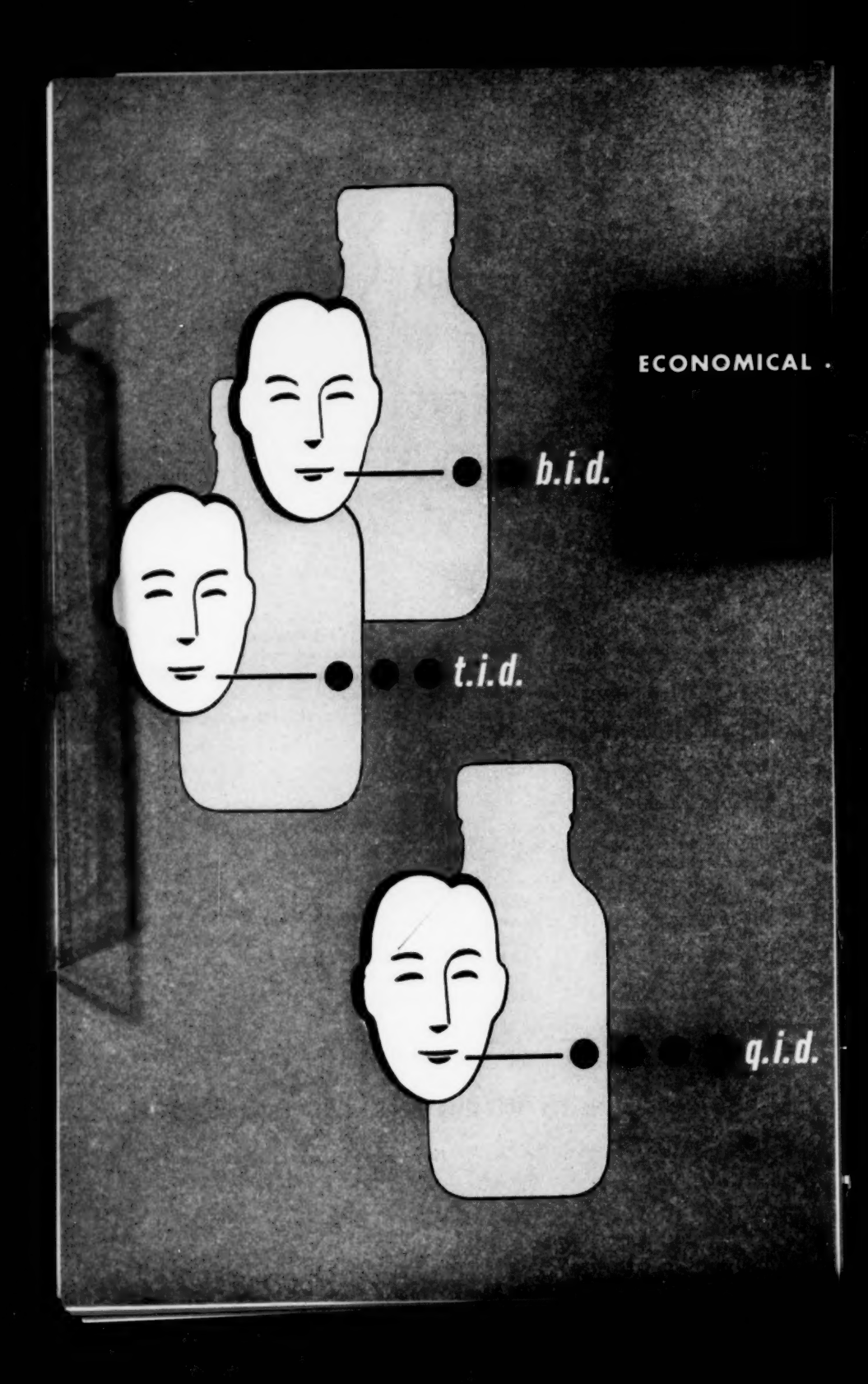
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IN RESISTANT HYPERTENSION

Vertavis-Phen affords simplicity and economy of treatment in severe, resistant cases of essential hypertension (Grade III). Blood pressure is effectively lowered by a twofold action:

1. **VERTAVIS-PHEN** reduces peripheral resistance.
2. **VERTAVIS-PHEN** minimizes the hypertensive effects of emotional stress.

Vertavis-Phen seldom produces undesirable side-effects and permits the prolonged treatment required in resistant hypertension.

AVERAGE DOSAGE RANGE: 2 to 4 tablets daily after meals.
HYPOTENSIVE ACTION (single oral dose): 10 to 12 hours.

Each Vertavis-Phen tablet contains:
Whole-powdered veratrum viride . . . . . **10 CRAW UNITS***
Phenobarbital . . . . . **1/4 grain**

Supplied: Bottles of 100, 500, 1000 at prescription pharmacies everywhere.

*Biologically Standardized for toxicity by the Craw Daphnia Magna Assay.

Vertavis®-Phen

IRWIN, NEISLER & CO. 65th YEAR Irwin **DECATUR, ILL.**

that if these dollars were exempted from income tax payments, the tax structure of the country would be badly shattered. He said that the government would lose between 1 and 2 billion dollars. Other estimates scaled down to around half a billion.

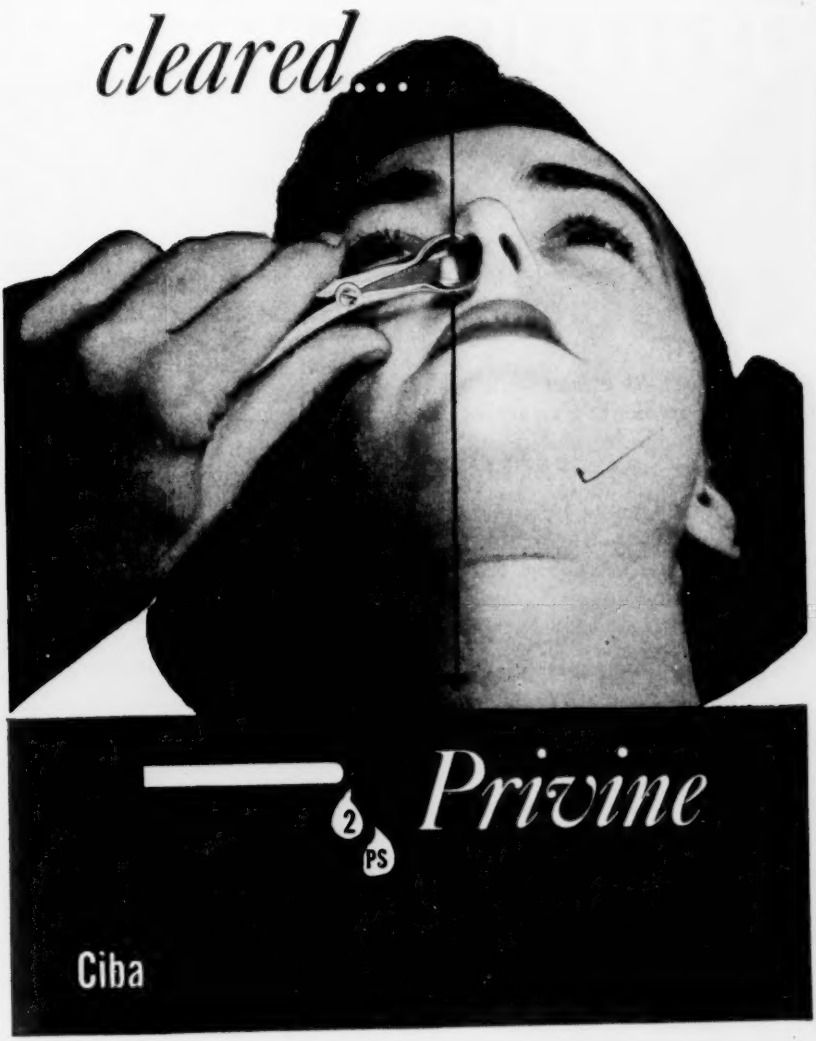
In the face of this, the spirited arguments of Sens. Zales Ecton (D., Mont.) and Lester Hunt (D., Wyo.) were futile. However, one significant fact was not brought up in the debate: If deductions were limited to physicians' and dentists' fees and basic hospital costs, the loss to the federal government would be only a fraction of the total estimate, and a sum which the federal budget might be able to stand.

Sens. Hunt and Ecton have not given up the fight. They think that with a little more education on the subject, the idea may be able to make progress in the next session. To some extent they have the support of Sen. John McClellan of Arkansas, the majority leader. While he won't support everything Sens. Ecton and Hunt propose, he is willing to back a plan for allowing low-income families to deduct their medical expenses from taxable income.

If something of this nature should be allowed, it would be the strongest stimulation yet to voluntary hospital and medical care plans.

Washington Notes

Dr. Percy Bailey is new director of the National Institute of Neurological


cleared...
Privine
2
PS
Ciba

Diseases and Blindness, newest unit of the National Institutes of Health for which funds were appropriated by the last Congress.

Army's unannounced tribute to Walter Reed on his centennial was to put official o.k. on use of his name for the Washington Medical Center; it's never been called anything but Walter Reed anyway, except in official documents.

Dr. W. Randolph Lovelace II, chairman of Armed Forces Medical Policy Council, has completed a six-week world tour of U.S. Army, Navy, and Air Force medical installations.

New members of National Science Board are George W. Merck, head of Merck & Co., and Earl P. Stevenson, head of Arthur D. Little, Inc.

A few per diem and consultant physicians may have to be dropped by the Defense Department because they've been classed as "civilian employees," and subject to Congress-imposed ceiling.

Hospitals: Labor Department has a comprehensive job guide for hiring and placing of hospital employees.

"She's Fashion Editor of 'Slick' magazine."

for

eye

infections

New

Gantrisin Ophthalmic

GANTRISIN DIETHANOLAMINE

'Roche'

Because Gantrisin* Ophthalmic has a wider antibacterial spectrum, it is highly effective against many microorganisms found in conjunctivitis, blepharitis, dacryocystitis, corneal ulcer, trachoma, superficial punctate keratitis and other eye infections.

Because Gantrisin Ophthalmic is an isotonic solution, it usually does not irritate or sting the eyes. The fact that it is a single sulfonamide, not a mixture, reduces risk of sensitization. A sterile, stable solution containing 4% Gantrisin Diethanolamine in 1-oz vials with dropper, it does not require refrigeration.

more effective

In a series of 180 cases, new Gantrisin Ophthalmic Solution proved more effective "*in acute and subacute conjunctivitis produced by either gram negative or gram positive organisms.*"†

safer Gantrisin Ophthalmic is "*better tolerated, and less prone to the production of sensitization or allergic reactions than any of the other sulfonamides or antibiotic preparations.*"†

†Quinn, L. H., and Burnside, P. M., *Eye, Ear, Nose & Throat Monthly*, 30:81, Feb., 1951

Hoffmann-La Roche Inc.

Roche Park • Nutley 10 • New Jersey

*GANTRISIN®—BRAND OF SULFISOXAZOLE (3,4-DIMETHYL-5-SULFANILAMIDO-ISOXAZOLE)

PHS officials fear possible critical shortages of some types of hospital equipment, including steel beds. The situation is not serious now, but trouble is in sight.

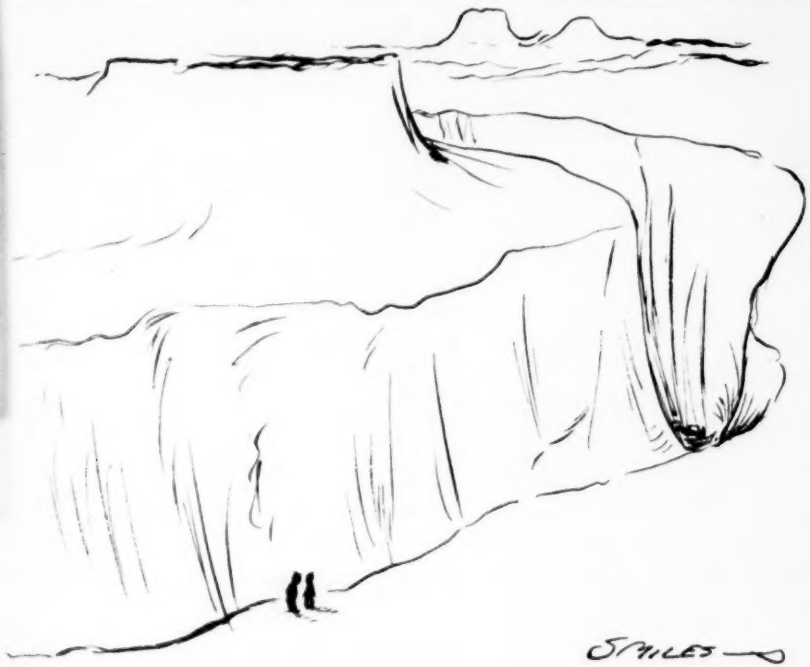
Price increases are likely in surgical catgut sutures because of pricing complications with meat packers.

Navy reluctantly reported an increase in illness among its members, 71% higher than a year ago. Rapid increase in personnel and flurries of respiratory troubles are to blame.

Public Health Service is attempting to build up a safeguard against biologic warfare by creating a thin network—12 men in key regions—to concentrate on epidemic intelligence. The men, all PHS officers, were specially trained before being sent out in the field.

Public Health also is branching out its Industrial Hygiene Division, renaming it Division of Occupational Health and making it responsible for the investigation of health hazards in production and handling of radioactive materials.

Thanks to a House Committee, the new reserve reorganization bill gives reserve officers added protection. Active duty tours would be limited to twenty-four months, and the total to be called for any emergency would be determined by Congress, not by the services.



"Gad, what an incision!"

COMPE

A NEW PENICILLIN SALT

Compenamine, an entirely new penicillin compound, is the penicillin G salt of the levo isomer of N-methyl-1,2-diphenyl-2-hydroxyethylamine. Its generic name is *l*-ephenamine penicillin G. It is less soluble in water than is procaine penicillin, and its theoretical potency is 1,058 units per mg.

AS EFFECTIVE AS PROCAINE PENICILLIN G

The action of Compenamine, unit for unit, was found to be identical with that of procaine penicillin G against 73 strains of bacteria, six viruses, and five protozoa. Absorption and excretion curves are essentially the same for both penicillin salts, but longer blood levels are usually found with Compenamine.

SIGNIFICANT REDUCTION OF ALLERGIC REACTIONS

On the basis of extensive clinical experience,[1,2,3,4,5,6,7] Compenamine has been shown to be well tolerated even by patients sensitive to procaine penicillin G. In known reactors, in excess of 80 per cent can tolerate this salt without reaction. In over 1,000 cases, initial intradermal or topical use, followed by a large challenging dose 10 days later, *did not lead to induced sensitivity in a single instance.* In this series, only seven instances of allergic reactions were seen, less than one per cent. *Thus Compenamine greatly broadens the applicability of penicillin therapy.*

---

1. Longacre, A.B.: P-92 Penicillin; Report of a Very Low Reaction Rate in Therapy with a New Penicillin Salt, Antibiotics & Chemotherapy *1:223* (July) 1951.
2. Kadison, E.R.; Ishihara, S.J., and Waters, T.: A New Form of Penicillin, with Anti-allergic Properties, Am. Pract. & Dig. of Treat. *2*:411 (May) 1951.

PERSONAL COMMUNICATIONS

3. Lupton, A.: Presbyterian Hospital, New York.
4. Wooldridge, W.: Barnard Skin & Cancer Hospital, St. Louis.
5. Katz, S.: Gallinger Municipal Hospital, Washington, D.C.
6. Suskind, R.: Cincinnati General Hospital.
7. Finnerty, E.J., Jr.: Boston City Hospital.

NAMINE

INDICATIONS

Compenamine is indicated in the treatment of all conditions responding to penicillin. Since it is nearly insoluble in water and in oil, its dosage forms are of the repository type, leading to prolonged blood levels. Hence it makes possible once-a-day injection in most patients.

NO PRICE PENALTY TO YOUR PATIENTS

Compenamine costs no more than comparable dosage forms of procaine penicillin G, giving your patients all the advantages of this new penicillin salt without price penalty.

MERITS ROUTINE USE

Because it significantly reduces the incidence of allergic reactions, because its therapeutic efficacy is as great as that of procaine penicillin G, and because it imposes no price penalty, Compenamine merits routine use whenever a repository type of penicillin is called for.

AVAILABLE IN THREE DOSAGE FORMS

Compenamine is currently available in three repository dosage forms:

Compenamine (for aqueous injection), in vials.

Compenamine Aqueous, in vials and disposable and permanent syringe cartridges.

Compenamine in Peanut Oil, in vials and disposable and permanent syringe cartridges.

Other dosage forms will be announced shortly.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, NEW YORK 17, N. Y.

THE FIRST PRODUCER OF CRYSTALLINE PENICILLIN G IN COMMERCIAL QUANTITIES

HAPPY MEALTIME IS *Good Medicine!*

A BABY's response to life is largely conditioned by her early experiences with food.

During happy mealtimes, Baby's whole personality has an opportunity to unfold. It is no accident that a sunny disposition is so often found in babies who eat with *genuine* relish!

How fortunate for your young patients that Beech-Nut Foods taste so good! With such tempting varieties to chose from, mealtimes can be happy from the start.

A wide variety for you to recommend: Meat and Vegetable Soups, Vegetables, Fruits, Desserts—Cereal Food and *Strained* Oatmeal.

All Beech-Nut standards of production and advertising have been accepted by the Council on Foods and Nutrition of the American Medical Association.

Beech-Nut FOODS *for* BABIES

Babies love them...thrive on them!

Up-to-Date Antitussive

Sedative-antitussive effects of Methajade control sleep-robbing paroxysmal cough—allow patients to get needed rest.

SUBDUES VIOLENT COUGHING

Methajade® spares your patients the needless violence of exhausting, "unproductive" cough —without depriving them of the benefits of normal expectoration.

Because it contains *methadone*, the synthetic analgesic-antitussive, *Methajade* is capable of suppressing the irritability of the cough reflex without blocking it entirely.

Because it contains potassium citrate and diluted phosphoric acid, *Methajade* promotes the liquefaction and loosening of mucus, facilitating the expulsion of bronchial exudate and debris.

Because it relaxes smooth muscle, including that in the tracheobronchial tree, *Methajade* is effective in relieving the bronchial spasm often associated with coughs.

Together, these actions tend to *decrease* the frequency and *increase* the efficiency of coughing, and to relieve bronchial spasm. *Methajade* is therefore well qualified as a practical aid in achieving the modern objectives of cough control:

(1) *to* preserve *the natural physiologic benefits of the cough*—

(2) *to* reserve *the act of coughing for "productive" expectoration.*

Composition — *Methajade* is a sugar-free antitussive with a delicious, fresh, lime flavor. Each 30 cc. (1 fl. oz.) contains:

Methadone hydrochloride* (*d,l*-6-dimethylamino-4,4-diphenyl-3-heptanone hydrochloride)	10 mg.
Warning: may be habit forming.	
Propadrine* phenylpropanolamine hydrochloride	0.12 Gm.
Potassium citrate	1.2 Gm.
Diluted phosphoric acid	4.5 cc.
Alcohol 5%	

Average Dose for Adults: 1 to 2 teaspoonfuls every three or four hours.

CHILDREN:

(*Note:* Methajade *should not be administered to children under 2 years of age. In children 2 years of age or older,* Methajade *should be used only in cases of severe, intractable cough.*)

Two years: ¼ teaspoonful not more often than every four hours.

Five years: ½ teaspoonful not more often than every four hours.

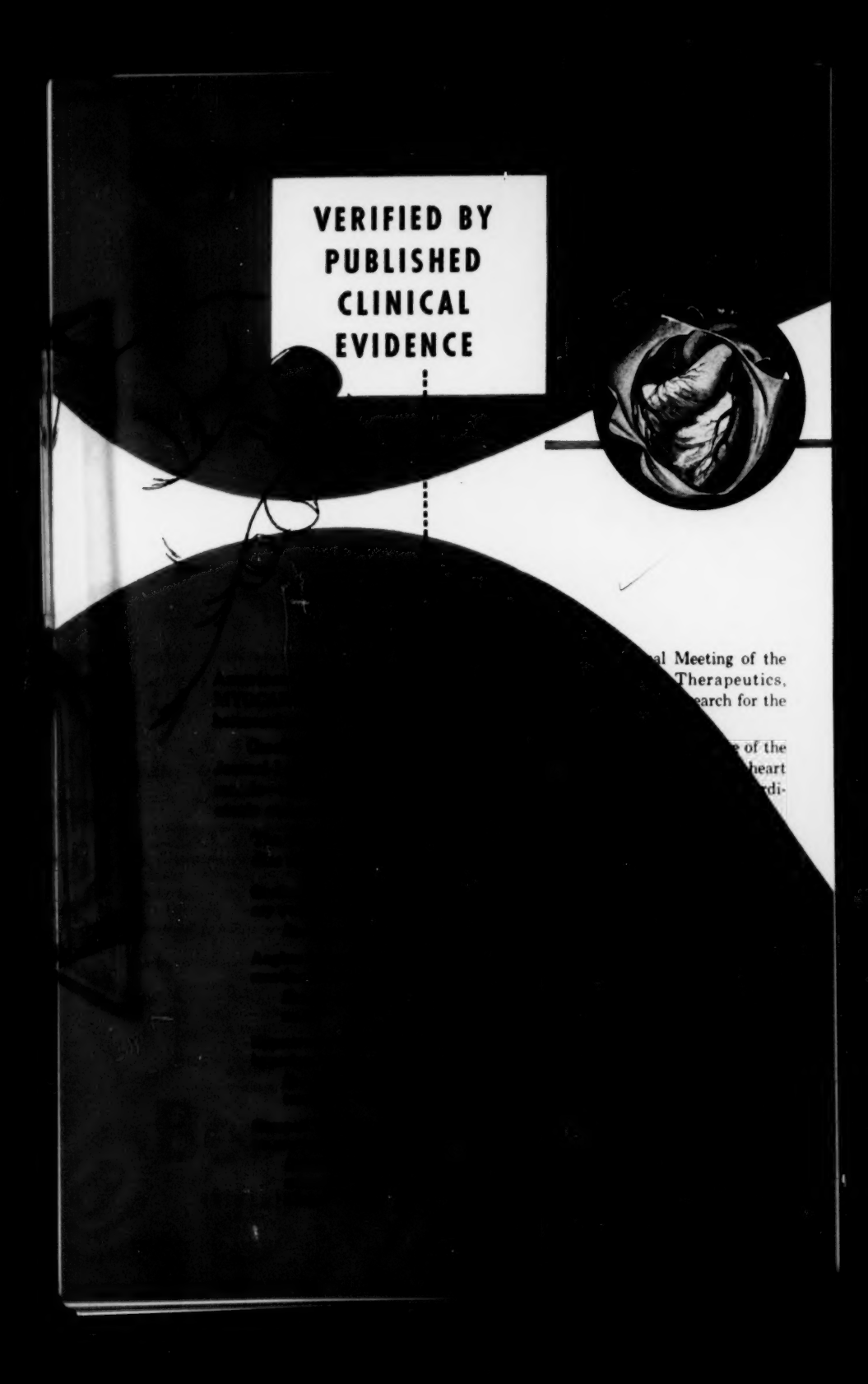
Ten years: 1 teaspoonful not more often than every four hours.

Packaging—*Methajade* is supplied in pint Spasaver® bottles and gallon bottles.

Sharp & Dohme, Philadelphia 1, Pa.

*The analgesic potency of methadone hydrochloride is—weight for weight—approximately equivalent to that of morphine. It controls cough as well as, or better than, codeine. Methadone hydrochloride is subject to the provisions of the Harrison Narcotic Act.

METHAJADE® Antitussive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EVIDENCE

...uable Cardiac

Myocardone

This report further emphasized:

PROVEN EFFICACY

When MYOCARDONE was administered " . . . Improvement consisted of increased capacity for exertion, decrease or disappearance of symptoms requiring nitroglycerin in the anginal cases, and in disappearance of orthopnea, pulmonary congestion and edema in the decompensated cases."[2]

GREATER SAFETY

"There were virtually no side effects."
"All patients tolerated the drug well."[2]

PROLONGED RESULTS

"Patients whose response to MYOCARDONE was satisfact... tinued to do well for from 2 weeks to several months aft... was withheld."[2]

Digitalis–Nitrite Replacement

MYOCARDONE advantageously replaces or s... therapy. It reduces or eliminates the need for nit...

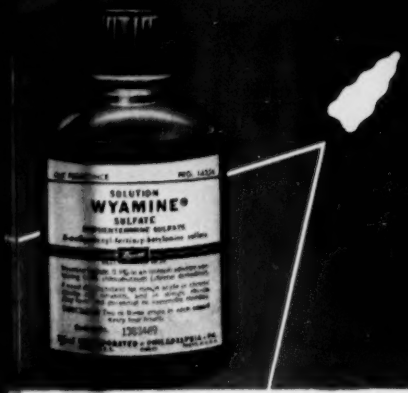
1. Steigmann, F.; Weiss, A., and Feldman, D.: Clinical Observations on the Efficacy of a Heart Muscle Extract in the Treatment of Cardiovascular Dis...es, Federation Proceedings, Vol. 10, ...0, March, 1951. Reported at the ...first Annual Meeting of the Amer...ty for Pharmacology and Ex... Therapeutics.

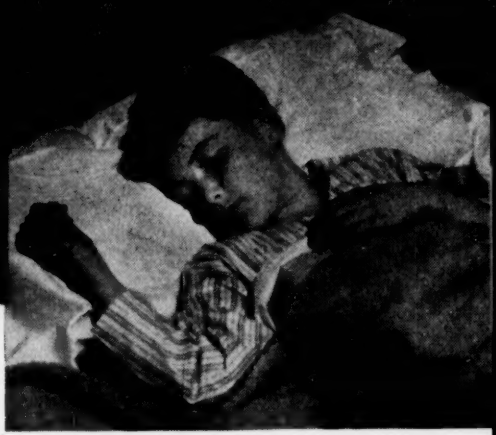
2. Weiss, A., and Fe... Muscle Extract ... Cardiovascular D... (Aug.) 1951, pr...

LITERATURE ON REQUEST

HIGH LOCAL
Decongestive Action

Wyeth®





LOW SYSTEMIC
Stimulant Effect

Extensive tests show that Wyamine decongests and maintains shrinkage of nasal mucosa—up to three hours. Clinical evidence confirms, too, that Wyamine is remarkably low in cerebral stimulant effects . . . brings quick relief and allows restful sleep.

Available as: Solution Wyamine Sulfate, Bottles of 1 fl. oz.

Wyamine-Tyrothricin Nasal Solution, Bottles of 1 fl. oz.—with dropper or JETOMIZER®.

Wyamine-Penicillin, Capsules, Penicillin with Vasoconstrictor, for preparation of nasal solutions.

WYAMINE®

Mephentermine

N-methylphenyl—*tertiary*—butylamine WYETH

Wyeth Incorporated, Philadelphia 2, Pa.

New Hope
for hypertensive patients

A Modern Medicine Editorial

A man of 58 years comes to a consultant with a systolic blood pressure around 250 mm., a diastolic pressure of 150 mm., a few tiny hemorrhages in the retinas, some headache, some shortness of breath, some heart pain on exertion, and so great a nervous irritability and quickness to anger that he is no longer able to get along with his fellow workers at the office.

Obviously, he is greatly in need of help, but what can be done? His doctor has already prescribed a diet low in sodium chloride, but about all this has done has been to embroil him with his wife, whose cooking he now denounces bitterly. Eating tasteless food has made him the more despondent and discouraged.

Another physician gave him daily doses of phenobarbital, but this depressed him a bit and made it harder for him to do anything. Someone else gave him potassium thiocyanate, but this did not greatly lower his pressure and it did not make him feel any better. Then his skin began to break out and the treatment had to be stopped.

A sympathectomy was suggested but the surgeon dismissed the idea because the man is too old. The operation seldom does much good after the age of 45, and is rarely done after the age of 50.

What, then, is left to be done? Today some new drugs look promising. In one group are pentamethonium or hexamethonium iodide or bromide, and in another are 1-hydrazinophthalazine and 1-hydrazino-4-methyl-phthalazine. Some three

years ago the methonium radicle was found to lower blood pressure so much that, in many cases, the person treated could hardly walk around; when standing, his pressure would fall so low that he would get dizzy.

Now, Dr. F. H. Smirk of New Zealand has found that by increasing the dose from 15 to perhaps 200 mg. a day, injecting the material steadily or at frequent intervals with the patient in bed, a pressure of, let us say, 260/150 can be dropped to 130/90 and maintained at that level for ten days or more. The patient's heart, kidneys, eyes, and brain are given a chance to rest and get better.

Smirk and his colleagues have reported good results in the treatment of 170 patients, most of them with severe hypertension. The rest that can be given patients in this way may be as good as or better than that given with the Kempner rice diet. Perhaps, at intervals, repeated courses can be given, and in this way the patient's efficiency and life can be prolonged.

Always the biggest question in the treatment of hypertension is: Will the lowering of the pressure prolong the patient's life or make it possible for him to keep at work? No one knows.

Very hopeful is recent work indicating that two of the hydrazino-phthalazines have a remarkably prolonged pressure-reducing action. At the last meeting of the American Society for Clinical Investigaion, Dr. Henry A. Schroeder reported that in 30 cases these drugs, given by mouth, lowered high pressures to normal and, what is most hopeful, caused them to stay down for days and weeks.

Schroeder thinks these drugs act by neutralizing the effects of pherentasin, a very powerful pressor substance found in the blood of persons suffering from hypertension. Pherentasin is a primary amine which contains an active carbonyl group.

If this should prove to be the important substance that sends up the blood pressure, and if its action can now be blocked by chemical substances specially designed for the job, a cure for hypertension will be in sight.

WALTER C. ALVAREZ

Symposium on Gynecology

Foreword

WILLIAM J. DIECKMANN, M.D.*

THE subject matter in this gynecologic symposium comprises almost all the medical and surgical gynecology that the general practitioner and the specialist will encounter.

The cause of medicine has not been helped by the indiscriminate use of "shots" or by the treatment of various gynecologic conditions with needless and occasionally harmful surgery, which frequently leaves the patient in a worse condition after than before the operation. Similarly, another type of medicine should be abandoned. This is the practice of treating a patient in the fifth and sixth decades with various hormones to cure vaginal bleeding, until someone examines her and finds a far advanced carcinoma of the genital tract. We hope that this symposium will influence doctors to practice better medicine.

The treatment of gynecologic cancer should be done by the gynecologist who has had special training in that field. Certification does not imply adequacy in skill and knowledge in such a complex disease. The number of patients with genital cancer who have been improperly or inadequately treated by gynecologic specialists is constantly increasing.

We were fortunate in obtaining an article by Dr. Herbert F. Traut who, in association with Dr. G. N. Papanicolaou, designed the screening method which shows promise in detecting patients with carcinoma of the cervix and uterus at an early stage. This procedure is still relatively new and there is an insufficient number of trained technicians and doctors to carry it out. No patient should be subjected to major surgery or irradiation treatment because the vaginal smear is positive.

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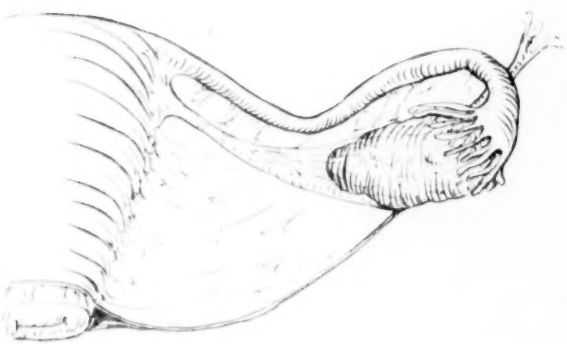
Operation should not be done unless an expert cytologist has examined the smear and the diagnosis of malignancy has been made by a competent pathologist.

The article on thromboembolism was included although the guest editor is not in accord with routine anticoagulant therapy after gynecologic surgery. It is not a procedure free from danger. The neutralization of dicumarol is not so easy as the authors seem to indicate. However, for selected patients the procedure may be of considerable value, but a competent laboratory for the prothrombin determination must be available.

Dr. Emil Novak, the dean of gynecologists, stresses the fact that nature is still the best doctor in the treatment of menopausal symptoms and signs, pointing out that for 90% of patients no endocrine therapy is necessary.

I am grateful to the authors who have contributed so ably to this symposium, and the medical profession is also indebted to them for their many valuable publications.



Reflections on Endocrine Menopausal Therapy

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Prepared for Modern Medicine

Older gynecologists will recall the sharp division of opinion which existed as to the value of ovarian therapy for menopausal symptoms before the isolation of the female sex hormone and the availability of really potent preparations. For considerably over a quarter of a century, gynecologists had employed preparations which, in retrospect, we now know were almost inert, so that the skeptics of that day were undoubtedly right in their insistence that any benefits following such therapy were achieved by the psychogenic route.

No one now will dispute the efficacy of estrogen in the relief of vasomotor symptoms, but by the same token no one can dispute the fact that the frequently unnecessary and unwise employment of estrogen constitutes one of the most serious abuses of our profession. Every doctor will concede the entire normality of the menopause, but in his practice he does not seem to appreciate that at this epoch the ovary dies a natural functional death and that the body soon adapts itself to getting along without any ovarian estrogen.

If this one point is fully appreciated, the doctor will at once question the rationale of feeding or injecting estrogen continuously and for long periods of time, thus deferring the readjustment which the body must inevitably make to the absence of ovarian estrogen.

Recognition of this fact would make estrogen therapy illogical and perhaps silly were it not for the further fact that during this natural period of readjustment certain characteristic symptoms, particularly the vasomotor group of flushes and sweats, may become manifest, although the exact nature of their mechanism is not clear. Fortunately, in the great majority of patients these symptoms are slight and easily tolerable, especially if their normality is explained to the patient and she is given a little reassuring talk to disabuse her mind of possible misconceptions about the significance of the "change of life," which really shouldn't involve any great change at all.

In cases of this moderate type, sometimes almost symptomless, common sense should dictate that there be no interference with the natural phenomena and that the woman should get the inevitable readjust-

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ment over with as quickly and naturally as possible, without the estrogen enthusiast messing things up.

However, in a small proportion of menopausal patients, in my experience something like 10%, the vasomotor symptoms, with sometimes a considerable secondary retinue of functional nervous symptoms, are really severe and distressing, and the woman is entitled to the relief that can be given by estrogen. Such treatment, however, should be looked upon as purely symptomatic, merely easing a woman over the usually periodic symptomatic bumps she is encountering during the period of readjustment. The estrogen treatment should therefore be intermittent, with cessation when the symptoms are ameliorated. I believe that the frequently recommended plan of continuous maintenance dosage is as illogical as it is harmful, and that it can prolong the menopausal transition stage, in addition to other undesirable hazards.

Estrogen therapy should be oral and not by the hypodermic route. Innumerable publications, including a good many of my own, have been hammering away at this point for years, and the fact that "shot treatment" is still widely prevalent is a striking commentary on the slowness with which bad professional habits are corrected. As many others can say, I have not used the hypodermic route for estrogen therapy for many years, because the oral route is just as effective, is more agreeable and convenient, is cheaper, and avoids the real hazard of creating psychologic addicts to the needle.

Another serious indictment of prolonged or continuous estrogen can be made, in that uterine bleeding is often induced in women whose natural menopause has occurred some time previously. Such postmenopausal bleeding causes concern to both patient and doctor, since it naturally raises the suspicion of cancer and, in at least some cases, necessitates diagnostic curettage. I have observed innumerable instances of this abuse, as have other gynecologists, and encountered such a considerable group even in the early days of stilbestrol abuse that I was moved to publish a paper warning of this hazard (*J.A.M.A.* 125:98, 1944).

Here again, such knowledge is slow to permeate the profession, and flagrant abuse of this sort is still frequently observed. In a very recent case, a woman of 62 had been taking a 1-mg. stilbestrol tablet nightly for fourteen years. During this time she had had frequent bleeding episodes which she dutifully reported to her doctor, receiving the advice that she take more stilbestrol. The hysterectomy in this case showed a remarkable picture of histologic transition stages between benign hyperplasia and what is apparently adenocarcinoma.

This case brings up the frequently raised question of the possible carcinogenic hazard of estrogen therapy, a question much too big to elaborate upon here. A proper answer presupposes some familiarity with the enormous amount of experimental work which has been done in this field.

Suffice it here to say that it has

been possible to produce cancer of the breast and cancer of the cervix in mice, although this does not mean that the ultimate cause of these experimental cancers is estrogen. All sound investigators have emphasized the impossibility of eliminating from consideration the probably more important and fundamental genetic factor.

Estrogen administration is, therefore, probably to be looked upon as a predisposing or inciting factor, and it is in this sense that we should apply such observations to clinical practice. One other by-product of such studies is the fact that long-continued administration of perhaps very moderate dosage is far more potent in producing cancer than even huge total dosage limited to a short period.

A small number of endometrial cancers, and a smaller number of breast cancers, have been reported following estrogen therapy, but these are not impressive statistically in view of the innumerable cancers observed before the days of estrogen therapy and the many patients who have had no estrogen therapy and yet have developed cancer.

At the present time it may be fairly stated that there is no basis for apprehension from some such conservative plan of estrogen therapy as that sketched above. On the other hand, no conscientious physician would, in the light of experimental investigations, wish to be guilty of excessive and especially prolonged estrogen therapy. This precaution would be doubled for patients who, by virtue of heredity or the existence of some so-called precancerous lesion, may be suspected of cancer susceptibility. To this group we would certainly add patients in whom menopausal symptoms develop after surgical or irradiation therapy of cancer. While I believe that modest dosage in this last group carries little or no hazard, most of us would prefer, when symptoms are troublesome, to use testosterone, which is almost as efficacious as estrogen in the relief of vasomotor symptoms and has no carcinogenic tendencies.

One final thought is worthy of re-emphasis. Women rarely have genuine vasomotor symptoms while still menstruating, the latter fact indicating that their ovaries are still producing estrogen. Symptoms ordinarily do not appear until skipping of periods begins, and especially after cessation of the function. How absurd and inexcusable it is, therefore, to start estrogen therapy for a woman perhaps in her early forties and many years before her menopause, just because such vague symptoms as general nervousness and irritability make her, and unfortunately sometimes her doctor also, suspect that "the change of life is beginning." Such women characteristically have no real vasomotor symptoms—the real criterion of the menopausal factor.

In conclusion, it is obvious that endocrines play only a small part in the management of the menopause, and that the doctor who relies only on them is apt to be a pretty poor doctor. In addition, such a physician can do the patient far more harm than good.

Screening Methods for Gynecologic Cancer

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Prepared for Modern Medicine

At the outset, a definition of screening methods may be of some help because of the many biologic methods which have been applied to the diagnosis of various diseases, and also because we have hoped that some such method might be available to anticipate or recognize malignant disease.

In the diagnostic area of disease—syphilis, for instance—we have the Wassermann and the Kahn reactions, which at first were thought to be very specific. As time has passed, they have been found somewhat less than that in certain phases of the disease. Not only this, but their turbidity reactions may apply to other diseases as well. In addition, other biologic tests have been applied to the diagnosis of other diseases. However, taking the medical field as a whole, there is a paucity of definitive biologic tests which can be applied to the diagnosis of any individual disease process.

One of our greatest hopes has been that, in some way, a process of biologic integration may be found which, even though not entirely specific, would indicate the presence of cancer in the human body. At the present time nothing of this sort exists. There are various approaches to the ideal in a remote way, and many have seemed promising, but they have proved disappointing on thorough application and scrutiny of results. So, today, we have no really adequate approach from the point of view of the biochemist.

Study of the morphologic changes in cells is still the dominant technic in screening and diagnosis. From the time of Virchow we have had groups of criteria which have helped very much. Virchow was the first to apply the cellular theory of disease in a specific way to cancer in the human body. He was the great teacher who demonstrated that cancer was primarily an overgrowth of cells which multiplied without restraint and invaded contiguous tissue.

Invasion was the keynote of Virchow's emphasis, and invasion has been the *sine qua non* of cancer diagnosis ever since. The diagnosis of cancer has, as far as the pathologist is concerned, been a matter of demonstrating, in a tissue preparation, whether a particular group of cells has actually invaded normal cells in the vicinity. Upon this has been based the tremendous progress made in cancer diagnosis and treatment in the past.

Invasion, however, may be a fairly

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late phenomenon in epithelial cancer. As a result of more recent studies, we ponder whether there may be latent periods or such a thing as cancer within a single layer of cells as, for instance, in the superficial skin layers of the body or in a mucosal layer lining the various cavities of the body. The concept of carcinoma in situ is a new one, and one about which we must learn. The concept of preinvasive cancer has grown.

Much of our information about the early stages of cancer, as it spreads from the epithelial surfaces of the body or from the body cavities into the underlying tissues, is based on the random biopsy specimen. We have come to feel that intraepithelial cancer is a very common occurrence, perhaps the beginning of all true cancers, but we still have a great deal to learn about this intraepithelial growth—its inception, mode of development, and above all, etiology.

Therefore, we speak about intraepithelial cancer with considerable reservation. Of course, whether it is actually confined to the intraepithelial margin or whether, here or there, one may find invasion in a given instance, is something that will be learned only through greater experience. We are making progress, and although the early Virchowian ideas with regard to invasion still dominate the general pathologic picture, our knowledge is becoming more clear about characteristic cancer changes within the cell which are eventually associated with invasion. However, we have much to learn in this area of investigation.

Recent attempts to interest pathologists in the scrutiny of the individual cell, and the changes within it which may characterize cancer, have been among the greatest advances since Virchow.

Much of this interest in individual cells has stemmed from studies made a number of years ago in the New York Hospital, New York City, under the auspices of Papanicolaou and Traut. Many patients were studied for considerable periods of time with regard to the shedding of normal and pathologic cells from the various parts of the genital tract.

It was demonstrated that cancer areas shed cells more frequently, and more easily, than did those of normal tissue. Furthermore, it was shown that these cells contained within their cellular architecture significant changes which could be recorded and studied under the microscope and could then be considered indicative of cancer. This was a pioneer prospect fifteen years ago, but has increased in importance and interest as time has gone on.

Unfortunately the training of the mind and of the individual in judgment is a slow process, and such scrutiny of cells is dependent upon a good eye, a retentive memory, and above all, a good associative memory.

The method of scrutinizing individual cells for cancer, particularly in the area of the female genital tract, has made slow progress because pathologists have not welcomed any new diagnostic procedure involving more time to screen slides. Of course, they should realize that the doctor, in his office, devotes many hours to the study of his patients before he

resorts to the services of the pathologist.

Unfortunately, some pathologists have always depended upon invasion of tissue as a criterion for cancer diagnosis. They seem reluctant to abandon this fairly simple, straightforward indication of cancer and to accept other more refined, although perhaps more time-consuming, evidences of malignancy. This is understandable. A considerable period may elapse before the public is benefited by the more advanced studies pertaining to cellular changes, as contrasted to tissue changes, or microscopic morphology in the diagnosis of cancer.

INSPECTION

For the purpose of completeness we should present some of the older attempts to elucidate the problem of screening for cancer of the female genital tract.

The most remote, the most honored, and perhaps still the most important single method is inspection by the physician. As the doctor increases his knowledge of the growth characteristics of cancer and the age incidence, together with the relationship to parity, as well as matters concerning the etiology of cancer, we may expect an increase in early diagnosis.

However, the doctor can inspect patients only when they present themselves to him. He cannot be expected to go out and bring them in. This is a matter for public education. If there is to be protection from gynecologic cancer, women must appear at reasonable intervals for diagnostic purposes.

Practicing physicians today are aware of the influence which publicity in this direction has had. We have looked at breast lesions of all kinds as a result of lay education. Unfortunately, the same sort of lay publicity, which began years before the publicity about breast cancer and which emphasized the significance of uterine bleeding, has not been so fruitful. One of the great misfortunes in education, and one we need to live down, is that the early publicity directors were so undiscerning as to choose bleeding from the vaginal tract as one of the first indications of cancer.

Actually, bleeding is a late symptom. It occurs only when ulceration has developed to a considerable degree, which also means that the lesion has achieved considerable size, whether on the cervix or in the uterus itself. Education of the public about lesions of the female genital tract has been largely wasted. We have much to retrieve. We must now teach women that periodic examination by a reliable doctor is imperative whether they have symptoms or not.

PERIODIC EXAMINATION

What is a *periodic examination?* What should it cover?

We must be practical about these things. We have to conserve the patient's time and, above all, we have to conserve the time of the professional man who is responsible for her care.

Generally speaking, *women who have never borne children should be examined once a year from the time they are 40 years of age until they*

are perhaps 65. Although these years are not completely definitive, insofar as the incidence of cancer is concerned, 96% of cases would probably be included.

The incidence of cancer is 5 times higher in women who have borne children; therefore, they should be seen more frequently. *Any parous woman over 35 years old, until she is 75, should be examined at six-month intervals for cancer of the cervix and of the fundus of the uterus.*

The physician should also be able to determine any changes in the ovaries at these examinations. This is of tremendous importance because, whereas cancer of the uterus has a few prodromal changes and symptoms which may be observed or realized by the physician or patient, ovarian cancer is notoriously asymptomatic. It can be observed and treated early only by means of repeated examinations at reasonably short intervals.

We have said a great deal about the relationship between the patient and her physician and about periodic inspections. This is a matter which cannot be overemphasized.

To bring us up to date historically, perhaps we should mention some of the other methods of diagnosis.

Inspection through an adequate speculum with a good light by a doctor familiar with the appearance of the various lesions of the vagina, cervix, and vulva is, of course, important. However, the commonest location of cancer of the genital tract is the external os. Naturally, much emphasis in the past has been focused upon this area, a natural result of the Virchow school of thought. For a definitive diagnosis, samples from the external os of the cervix should be submitted for microscopic examination. The biopsy method goes back about one hundred years, so we have one hundred years of experience with various kinds of biopsy technics.

BIOPSY

In view of this hundred-year-old technic, a very signal advance, it is discouraging to report that we have had no significant increase in the cure of cancer. The puzzling thing is that a woman does not come to the doctor until she has bleeding, and then the biopsy is nearly always positive. Examination reveals a third- or fourth-stage cancer, about which very little can be done. Our cure rate of cancer as the result of patients visiting doctors with symptoms and with the biopsy technic does not exceed 20%.

This is sad news, but there is worse. If you consider that all the various stages of cancer treated over the past fifty years with the best technics and the best follow-up care have not resulted in more than a 49% ten-year cure rate in all stages of cancer, we cannot be very proud of our record as physicians in the treatment of cancer of the uterus. This is the over-all picture, and this is the historic picture.

If, however, we consider the experience of recent years, in which cancer has more often been treated earlier, that is, at Stage 0, Stage I, or Stage II, certainly we can achieve a 70 or 80% cure rate in these. In the very early stages we may approach 100%.

The emphasis is, and must be, therefore, on the early diagnosis of cancer. Once cancer is established and growing extensively, little can be done. Better therapeutic agents than radium, x-rays, and surgery must be developed. These have been tried over long periods of time and are inadequate. We must concentrate our emphasis on early diagnosis so that cancer may be treated in time for good therapeutic results to be possible.

OTHER METHODS

In the past there have been other attempts to achieve early diagnosis. A notable one was sponsored and espoused over a period of years by Hinselman and his pupils. In an attempt to make early diagnosis a possibility, he developed a *colposcope* with low-power magnification and described minutely the intraepithelial changes on the surface of the vaginal and cervical mucosa.

This method has been in use principally in Germany and other European centers. Although somewhat helpful, it has not made a significant advance in the early diagnosis of cancer. In American clinics I have visited in which the Hinselman colposcope has been part of the armamentarium, I am sorry to report that the colposcope is usually covered with dust or a black cloth in some corner closet and is not actually in use. The colposcopic method of diagnosis, popular on the Continent and still written about, has not achieved any considerable importance among the American profession.

Some years ago, a colleague from Vienna, Schiller, invented a very ingenious method. Knowing that normal vaginal epithelium developed glycogen and that glycogen had an affinity for iodine, he espoused the idea that healthy vaginal epithelium would take up iodine and that areas of abnormal epithelial characteristics might be detected by their inability to absorb iodine. Iodine absorption is visible to the naked eye as a mahogany stain. The idea grew that one could perhaps see areas of malignant change by applying iodine to the cervix and, by superimposing the biopsy technic on regions which did not show normal iodine reaction, increase the accuracy of early diagnosis of cancer.

Although the Schiller technic has been applied in clinics all over the world for some time, it is probably fair to state that there has been little increase in early diagnosis or cure of cancer as a result.

More recently, other studies have been made upon the areas of the cervix in which cancer is common, particularly by such students as Foote at the Memorial Hospital in New York City. He has shown that cancer of the cervix cannot be excluded by a single biopsy. He stressed a *four-point biopsy*, and indicated that even then cancer could be missed. Instead of making a single tissue sample, specimens should be taken at 12, 6, 3, and 9 o'clock positions in the cervix. Even then there will be a residuum of cases in which cancer occurs in the endocervix, impossible to reach by external biopsy.

This is a very considerable advance. However, it is not very helpful from the long-range point of view or for the doctor who sees patients at six-

month or yearly intervals. If he were to take four-point biopsies on all patients to protect them from cancer, over a period of six, seven, eight, or nine years, there would be little or no cervical tissue left at the end of such a program. Therefore, the four-point biopsy protection of the cervix is not feasible as a screening technic. Some more gentle and less mutilating method must be developed.

Gusberg has advocated a *special biopsy instrument*, made to fit various sized cervical canals and pinch off an area of mucosa, in a superficial manner, completely around the circumference of the os. This is a new development and undoubtedly valuable. However, as we know, not all carcinoma of the cervix is at the mucocutaneous junction. Some occurs on the portio, particularly in parous women, and the lesion may develop in the endocervical canal. Hence, position of biopsy application becomes of increasing importance. The technic, of course, adds nothing to the diagnosis of endometrial carcinoma.

The question of positive and negative biopsies also arises. A positive biopsy may be definitive. However, there is a borderline of positivity, particularly in early cancer. There is a difference of opinion in regard to the appearance of cellular changes which characterize early cancer. The way in which the tissues are prepared and stained has much to do with the evaluation the microscopist gives cytologic characteristics.

We have a long way to go before we will have a really high grade diagnostic method for cancer of the female genital tract. However, we do not wish to be discouraging. Great progress has been made, and by realizing some of our defects, we are on the eve of even greater advances. In doing so, we will have the satisfaction of protecting our women in the future more adequately than we have in the past.

The idea of multiple biopsy is in itself marvelous. One might think that if all 4 biopsies made from the external os were negative, one could say that the patient did not have cancer. Unfortunately, this is not true. The whole cervix would have to be removed and sectioned serially and microscopic preparations made to be sure that the patient did not have cancer of the cervix.

However, we must be practical and realize that only repeated observations (and we are not sure whether that means repeated biopsy) and repeated smears of suspicious areas are called for. We should concern ourselves with other methods which may have more to offer—perhaps not at the present moment, but in the future. And so we come to a consideration of the *cytologic approach*.

CYTOLOGIC DIAGNOSIS

The theory of cytologic diagnosis is that cancer cells grow more rapidly and have less binding intracellular bridges than normal cells. Therefore, they shed cells more easily and can be detected in preparations which have been dropped into various receptory cavities of the body.

Some time ago we found that carcinoma of the cervix does shed cells, that it sheds them early, and that

they remain in the posterior fornices of the vagina for a considerable time. These cells can be aspirated from the exterior os or posterior fornix, and when properly stained, can be recognized under the microscope as cancer cells.

This concept was new fifteen years ago. It wasn't hailed with any enthusiasm by the pathologists because it was a strange way and an awkward way—from their point of view—to approach diagnosis. They had been so accustomed to getting a piece of tissue and studying it under the microscope that they lacked confidence in such a loose-jointed method.

Acceptance has been very slow, and there is still a group of pathologists who object to the whole idea. Others are mildly receptive, and some are enthusiastic. As a result of this idea of cytologic diagnosis as contrasted with tissue diagnosis, a whole new body of thought has developed regarding cell changes which are characteristic of cancer. This, in itself, is a significant advance and will improve tissue as well as cytologic diagnosis.

An advance has been made. However, there are certain handicaps to the preparation of cells upon a glass slide—the so-called smear technic—because so much depends upon the manner in which the smears are made.

They must represent an adequate sample. They must be made with a speculum examination so that a representative collection of cells from all surfaces of the uterus and the cervix can be made by aspiration from the posterior fornix of the vagina. This is the older Papanicolaou-Traut technic, which has been in vogue for a considerable period of time.

Some have felt that they have improved upon this earlier technic. Ayre believed that because carcinoma of the cervix is primarily a matter of the mucocutaneous junction of the external os, one could collect a greater concentration of cells by twisting a properly prepared speculum in this area. This procedure, however, fails to detect cancers of the fundus or of the endocervix adequately. We would agree with Ayre if, as a control, he would include a smear preparation from the posterior vaginal fornix with the speculum collection cells from the external os.

There have been other advocates who have attempted to make things simpler. So we now have a Gelfoam sponge which is spun around in the area of the external os, then fixed. Sections are made for examination under the microscope.

Recently we have a very interesting throwback in that Novak is now espousing collection of cells from the external os. This is also the basis of Ayre's idea. The Novak method of collecting cells by a sharp spoon-shaped instrument from the area of the external os is thought by its advocates to be an advance in early diagnosis. This is interesting because, whereas Schiller's technic has not been popular with regard to the iodine method, and Novak has been one of the most constant and persistent critics of the vaginal smear method, both are now getting around to the idea that something new must be done and are innovating variations of the original idea of collecting cells for early diagnosis. This is a healthy

sign, because it indicates that those who are thinking most in this field of medicine realize that the essential ingredient is early diagnosis and that the old methods of biopsy, symptoms, bleeding, and whatnot have not yielded substantial or encouraging results.

Much of the disparagement of cytologic diagnosis has resulted from the fact that cytologists with inadequate backgrounds of experience and judgment have attempted to make diagnoses. Cytologic diagnosis is and has been under considerable criticism. However, any new test or diagnostic method must always go through a period of trial and error before establishment of its true value.

As a result of many years of scrutiny of cancer cells in individual relationships outside of tissues, but perhaps in cell clusters, we have come to realize that there are a considerable number of characteristics which are definitive. This is a rather new concept and one which demands tissue as well as cytologic preparations and careful follow-up of patients. Cytologic diagnosis is a new science and is something which must be learned in a cytologic center. It is sufficiently difficult to have incited rebellion on the part of some diagnosticians in the pathologic area who have discounted the method because they do not have the time, ability, or receptiveness to new ideas to go ahead.

In some areas, cytologic diagnosis has fulfilled every possible preconceived hope. However, as a result of the reaction of the conservatives, progress of the method has been dampened. The general concept of cellular diagnosis has been put in abeyance for a time for that reason in this country. We are perhaps in the hands of the Philistines—shall we say the pathologic Philistines—who seem unwilling to progress because they hope to stem the tide of advance and so hold the line of diagnosis within the sphere to which they have been trained and accustomed. However, the time will come when cytologic diagnosis will come into its own. Whether this is late or soon depends entirely on the magnitude of the reactionary effort which has been so obvious on the part of many pathologists in this country.

In Europe, as a result of a war, workers have been somewhat late in learning the concept of cytologic diagnosis of cancer, particularly as it relates to the female genital tract. Now, from Holland, France, Germany, and England, we are receiving the most illuminating and enthusiastic reports. We may expect that this innovation of diagnostic method, which has been developed in America almost entirely, may be taken over by the Europeans and brought to fruition.

DETECTION PROGRAM

Now we come to a consideration of an adequate setup as we conceive it today. In the first place, there must be the physician with proper training in the nature of malignant disease, its characteristics, and its evidences in the woman patient. He must be able to make an adequate gynecologic, breast, and gastrointestinal examination. In this way he can protect his women patients from 90% of cancer.

The public must be taught to present themselves for periodic examination. Perhaps this is the greatest single educational program which must be undertaken. Whereas, in the past, educational programs have emphasized symptoms, we must now retract professionally and say that early cancer is asymptomatic and that if cancer is to be treated adequately, it must be treated in the early, asymptomatic stages. The only way in which one can possibly detect early cancer is by routine examination when the patient has no symptoms. Therefore, the periodic examination becomes tremendously important.

The physician must be trained in visual aspects of the disease and in the various methods which depend upon the collection of cells, such as the Papanicolaou-Traut method or the Schiller-Novak method, and in case these are positive, in the use of biopsy in appropriate areas. The physician should realize that the single-point biopsy does not rule out cancer, and that even the multiple four-point biopsy does not necessarily rule out cancer, but that in the presence of the positive vaginal smear preparations, repeated biopsies and observation over a period of time are necessary.

Colposcopic examinations have not been very impressive nor very widely used in the United States. The Schiller iodine technic might well be used in the taking of biopsies but actually is not too helpful because so many benign pathologic processes produce scarred area and do not respond to iodine staining.

The repeated examination of women is the fundamentally important factor, and the medical profession as well as the public must be educated to the necessity for this. Constant follow-up is a positive part of such a program and just as important as the initial visit. The whole matter hinges on an entirely new concept of education of the profession as well as of the public.

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Postmenopausal Bleeding

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Prepared for Modern Medicine

It is important that the practitioner realize the significance of the relatively frequent symptom of postmenopausal genital bleeding, because the causative pathologic lesion is often of a serious nature and lost time may result in a fatal outcome. Prompt and proper treatment often effects a permanent cure.

Arbitrarily, most authors consider that genital bleeding is postmenopausal when it occurs one year after the last menstrual period. This is probably a wise definition and will be used in this discussion, but it should not be inferred that a normal physiologic menstrual period cannot occur more than a year after a previous period. In fact, we have observed a physiologic period occur in a woman of more than 50 whose previous period took place five years before. Examination of the endometrium showed an excellent secretory pattern with full luteinization.

It is often also true that bleeding in menopausal women after a lapse of less than one year may signifiy a serious pathologic lesion.

Several years ago we made a pathologic and clinical study of a large group of patients with postmenopausal bleeding. We found that in over 50% some malignancy along the course of the genital tract was responsible for the symptom. Carcinoma of the cervix occurred in approximately 35% and thus occupied first place as a cause of the bleeding. Carcinoma of the endometrium was second, accounting for 17%.

Postmenopausal bleeding in association with fibroids presents a practical problem which resolves into this question: When a woman has postmenopausal bleeding and fibroids are found on examination, is one justified in assuming that the myomas are responsible for the symptom?

The answer is no. There are several possibilities. The greatest is that the fibroid uterus harbors another pathologic lesion, such as cervical or endometrial cancer. It is mandatory that they be excluded before proceeding with treatment. There is also the possibility of sarcomatous change in the fibroids. If there is a bona fide history of growth of the fibroid after the menopause, a strong likelihood exists that sarcomatous change has occurred.

The next natural question is: Can benign fibroids ever be responsible for bleeding after the menopause?

Although not often the case, a benign fibroid can become active after all normal ovarian activity has

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ceased. We have rarely noted bleeding from growth of a benign fibroid after the menopause. Also we have observed a fibroid, which obviously was intramural before the menopause, work its way into the uterine cavity and produce even profuse bleeding after the menopause. Benign cervical polyps and benign endometrial polyps not infrequently cause bleeding after the menopause, but endometrial sarcoma and myometrial sarcoma are rare lesions in women of that age as well as in younger women.

A common condition deserving consideration occurs after the termination of normal menstrual life and may result in bleeding from either the vagina or the uterus. With the withdrawal of estrogen, the vaginal mucosa becomes smooth and thin. In fact, it becomes so thin that abrasions in the vaginal mucosa are frequent and postmenopausal vaginitis is common.

Thus, infection gets into the vaginal wall and adhesions often appear between the vaginal walls. As a result of the infection, a purulent discharge occurs, which often is streaked with blood from the vaginal abrasions or tearing of the adhesions. The same atrophic process may occur in the cervix and occlude the canal by shrinkage or adhesion formation. Following this, infection commonly occurs in the occluded cervical canal or above, in the uterine cavity, and pyometra forms. As a result, pus may discharge intermittently and is often blood streaked.

In considering the cervix, cervical ulceration should be discussed. It is a much abused term, often being used by practitioners to describe a reddened condition of the cervix caused by a single layer of columnar epithelium of the endocervix extending beyond the external os onto the portio. This condition can be congenital or may, in the parous woman, result from an ectropion caused by bilateral cervical laceration. Unless this manifestation is associated with excessive cervical discharge, it does not require treatment. If there is any suspicion of malignancy, biopsy is required, but this type of cervix should never loosely be called "ulcerated" simply because of its red color.

True benign cervical ulceration may occur as the result of a vaginal pessary or as a sort of decubitus ulcer if the cervix prolapses below the vaginal introitus. The bleeding from such an ulcer is usually only a blood-tinged discharge; again, biopsy and curettage may be necessary to prove that no more serious lesion is responsible for the bleeding.

The possibility of a lesion in the tubes must be considered. Tubal carcinoma is about the only likelihood. The discharge from this lesion is often watery and blood tinged. This lesion is a silent grower and the appearance of symptoms usually indicates an advanced lesion. Fortunately, it is rare.

Dysfunction of the ovary is often the cause of abnormal bleeding in a menstruating woman. The ovary is less frequently incriminated as a cause of postmenopausal bleeding, yet the bleeding in the elderly may be a sign of ovarian neoplasm, either benign or malignant. Feminizing tumors, such as the granulosa-cell growths and theca-cell tumors, char-

acteristically, but not invariably, cause bleeding after the menopause. These functioning tumors are not the only ones associated with postmenopausal bleeding. About one-fourth of the ovarian tumors of all varieties in our laboratory appearing after the menopause were associated with bleeding, and not infrequently the bleeding was the first symptom.

Within the past decade or so a new form of postmenopausal bleeding has made its appearance and now has become frequent. We refer to bleeding resulting from estrogenic therapy. Stilbestrol is the most apt to cause bleeding and, in our experience, estrone the least.

Bleeding has occurred so frequently in women taking estrogens that the necessity of curettage has greatly increased. The physician is confronted with a woman who is bleeding at least a year postmenopausally. She gives a history of hormonal therapy, but one cannot safely assume that the bleeding is induced by the medication. The only safe way to exclude malignancy is by curettage and cervical biopsy. The endometrium may show hyperplasia as the result of the hormonal stimulation, but more often bleeding is induced from the atrophic endometrium by the estrogenic substance or its withdrawal.

After this short review of the pathology that may lurk behind this symptom, it becomes obvious that postmenopausal bleeding requires complete investigation. This is true even though the bleeding is slight. We have come to regard very seriously the appearance of even a little blood following coitus.

What then should the practitioner do when the woman appears with postmenopausal bleeding? A careful history is first required, with special reference to hormonal therapy and contact bleeding. Then a bimanual examination is essential, followed by careful examination of the vagina and cervix under good illumination.

If an obvious cervical lesion is seen, it should be biopsied and sent to a competent gynecologic pathologist. One should not be completely content, however, with the finding of a slight vaginitis or even a cervical polyp. If a polyp is present and the bleeding has been slight, it is justifiable to remove it and keep the patient under observation. If bleeding recurs after removal of the polyp, no time should be lost in doing a curettage and cervical biopsy.

A suspicious cervical lesion can readily be biopsied as an office procedure with a punch biopsy forceps, but when a curettage is necessary, general anesthesia must be used so that the cervix may be well dilated and the curettage of the uterine cavity be complete. The office procedure of suction curettage may be useful to obtain a sample of the endometrium in sterility studies but has no place when curettage is indicated to exclude endometrial malignancy.

Care should be taken in the selection of a competent gynecologic pathologist to pass judgment on the specimen. Many radical operative procedures are done today as the result of erroneous pathologic opinions, and many women are also irradiated unnecessarily. For those of us who are interested in gynecologic

pathology it is all too common an experience to receive a microscopic section of a cervix from a surgeon who has performed an ordinary panhysterectomy because of a "suspicious" cervix. Such a section may show no evidence of malignancy, indicating that a useless operation was done. On the other hand, it may show invasive cancer, demonstrating that the patient has been treated inadequately for this serious disease.

The time to make an exact pathologic diagnosis is before major surgery is done, rather than to regret the surgery after the pathologic report on the removed specimen.

In a small percentage of cases, neither bimanual examination, biopsy, nor curettage will explain the bleeding. Such cases should not be discussed and forgotten. The possibility still exists that a very small lesion in the cervix or endometrium has been missed. There is also the chance of a small ovarian neoplasm which has not yet caused noticeable ovarian enlargement. The patient should be observed and reexamined after two months. If the bleeding persists or recurs, repeated curettage and biopsy should be done.

The general practitioner is in the most strategic position of all the medical profession in the fight against cancer, because he is the first line of defense. After making certain of a diagnosis, the practitioner's responsibility ceases, except in helping the patient select a competent gynecologist for definitive treatment. An error in judgment or failure to make the necessary complete examinations when the patient first presents herself may spell her doom, whereas a correct early diagnosis often results in cure. A comprehension of the simple pathologic truths will go far in improving the curability rate of female genital cancer.

¶ ACUTE UTERINE BLEEDING is generally arrested in a few hours by intravenous injection of estrogen. A natural equine product such as Premarin may be given three or four times in doses of 5 cc. or 20 mg. every six to twelve hours. After initial arrest of bleeding, oral estrogen in decreasing dosage prevents withdrawal bleeding. Cyclic progesterone therapy is given each month until spontaneous ovulation is resumed. The therapy may be successfully used for patients with functional uterine bleeding, but Robert B. Greenblatt, M.D., and William E. Barfield, M.D., of the Medical College of Georgia, Augusta, warn that care must be exercised because apparently good, though temporary, results are also obtained in cases of hemorrhage from cancer or ectopic pregnancy.

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Management of Uterine Myomas

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THE method to be employed in the management of a uterine myoma should be determined by the type and degree of change produced in the function and structure of the uterus and adjacent pelvic organs.

The functional and anatomic alterations are dependent upon dysfunction of the endocrine system, the size and location of the myoma, the rate and direction of its growth, and the occurrence of degeneration and other complications in the myoma and uterine adnexa. In probably no other disease do the presenting symptoms play so important a role in the selection of the method of treatment.

About 65% of myomas have profuse bleeding as the presenting symptom. Of these, 80% are menorrhagic and 20% metrorrhagic. The menorrhagias are usually associated with endocrine disturbances, intramural and submucous myomas, and rarely with subserous myomas.

Experimental data by Lipschutz and others have suggested that estrogens play an important role in tumor production. The fact that myomas tend to regress with the menopause suggests that protracted estrogen stimulation, as occurs with follicular retention cysts, may be a factor in myoma formation. Loss of contractility of the myometrium results when a myomatous tumor is interposed within the uterine wall. The blood vessels are insufficiently compressed and menstruation becomes profuse and prolonged.

Metrorrhagia results from loss of surface continuity of the epithelial lining of the uterine cavity as is seen with necrosis of a hyperplastic endometrium or from ulceration caused by pressure atrophy of the endometrium over the most prominent part of the tumor. Carcinoma of the endometrium or cervix or pedunculation of a submucous myoma must also be considered.

Myomas may also be accompanied by sterility or complications of pregnancy, especially abortion, premature labor, and abnormal presentations. In the absence of other causes such as ovarian dysfunction, hypothyroidism, asthenia, or tubal occlusion, it may be assumed that the myoma produces the disturbances of fertility or gestation.

Pressure symptoms may be caused by the weight of a large myoma in the abdominal cavity. If the myoma is in the lower half of the uterus, especially in the isthmic and

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cervical portions, or has grown laterally into the broad ligament, pelvic pressure symptoms are the rule. Pain may result from stretching or rupture of the capsule, lymphostasis, infection, rapid growth, degeneration, axial rotation of the myomatous uterus, or torsion of a pedunculated tumor. Such complications may be observed with all myomas. The presenting symptom is, therefore, an expression of the site, manner of growth, or complication of a myoma.

DIAGNOSIS

The diagnosis is made by: [1] bimanual palpation which elicits the presence of one or several tumors of globular shape and firm consistency connected with or contained within the uterus; [2] diagnostic curettage and microscopic examination to determine whether the menorrhagia is caused by endocrine dysfunction or whether the metrorrhagia is due to loss of surface continuity, especially that caused by carcinoma of the endometrium or cervix; [3] roentgen rays and injection of iodized oil, which may reveal a pedunculated myoma within the uterine cavity or ulcerations or excrescences of the endometrium; pneumoperitoneum, peritoneoscopy, or culdoscopy, which may aid in the differential diagnosis between adnexal tumors, ovarian cysts, and myomas; the roentgen picture, also, may facilitate the differential diagnosis between pregnancy and myoma or corroborate the diagnosis of pregnancy with myoma, if the pregnancy has existed for at least fourteen to sixteen weeks; [4] laboratory examinations, especially the Friedman test which may assist in the diagnosis of early pregnancy; [5] blood counts which reveal the degree of anemia; and [6] sedimentation of red blood corpuscles, which is of diagnostic importance in inflammatory complications.

A diagnosis of myoma, however, should always be made from the clinical findings. Diagnostic curettage, roentgen examination, and laboratory tests should be made to corroborate the clinical diagnosis.

Subserous myomas that protrude from the uterine surface or pedunculated subserous myomas are readily diagnosed by their location, globular form, and firm consistency. The differentiation from benign ovarian tumor and ovarian and peritoneal carcinomas is made by bimanual finding of the site of origin of the ovarian tumor and the presence of a normal-sized uterus.

Ovarian cysts have a fluctuant, soft consistency; malignant ovarian tumors are nodular and firm and are frequently associated with ascites. Solitary pedunculated subserous myomas are freely movable. They may have a soft, fluctuant consistency if edema or lymphangiectasia is present; they then simulate ovarian cysts. The palpation of normal adnexa by rectovaginal examination aids in the diagnosis. Finally, pneumoperitoneal roentgen examination or culdoscopy will remove any diagnostic doubts. The peritoneoscope is sometimes valuable in doubtful diagnoses.

Submucous myomas can be diagnosed by intrauterine palpation, sounding, roentgenograms after injection of Lipiodol, or the hysteroscope. If the myoma has been forced into the cervical canal or expelled into

the vagina, it may be felt on palpation or seen on inspection.

Partial or total inversion of the uterus may complicate a submucous myoma. If downward traction is made with a tenaculum forceps, the pedicle may be felt by the examining finger advancing along the tumor to the cervical canal. If the pedicle tapers upward, inversion is not present. If it broadens upward, inversion is likely. Cervical myomas may simulate pedunculated submucous corpus myomas. By sweeping the examining finger around the myoma one may detect the origin of the tumor in the cervix or a pedicle extending into the uterine cavity.

Intramural myomas may be diagnosed from the enlarged uterus with its irregular shape and thickened wall and the localized changes in consistency. Should the uterus be symmetrically enlarged and of uniform consistency, differentiation between uterine tumor, pregnancy, and ovarian tumor must be considered.

Pregnancy exhibits amenorrhea, a positive Friedman test in about 95% of cases, softening of the entire uterus, and, if advanced, fetal heart beats and movements. Roentgen examination then reveals the fetal bony skeleton. In the presence of amenorrhea, pregnancy should always be suspected and the patient observed and reexamined every two weeks until a diagnosis can be made. A pregnant uterus enlarges rapidly in comparison to a tumor.

Myomas may be complicated by pregnancy and adnexal tumors. The commonest are ovarian tumors; tuboovarian cysts and abscesses are less frequent.

Palpation of normal adnexa is the best diagnostic sign though, unfortunately, it is not always possible. The following palpatory procedures aid in making the diagnosis:

- Fix the tumor by downward pressure with one hand and then test the position, size, shape, and the consistency of the uterus with the other hand.
- Displace the tumor with upward pressure, and maintain the displacement with one hand placed above the symphysis and beneath the tumor while the other hand palpates the uterus to determine whether it is of normal size and whether the tumor is attached to the uterus.
- Exert traction on the uterus with a vulsellum forceps attached to the cervix and determine whether traction is transmitted to the tumor.

The diagnostic characteristic of a myoma is its mobility. Limitation or loss of mobility may be caused by excessive size with limited space, intraligamentous and subserous positions, or peritonitis with subsequent adhesions. These latter complications are usually the aftermath of degenerations or infection. They sometimes accompany the stasis edema or necrosis caused by axial rotation or twisting of the pedicle of a pedunculated tumor.

The blood supply of fibroids is poor and for this reason they are liable to degenerative changes. Despite the fact that the uterine blood supply is at a maximum during pregnancy, it is at just this time that myomas are most prone to undergo such changes. A fibroid thus affected becomes larger and softer and often painful and tender.

The process is acute—pyrexia and signs of acute peritonitis rapidly appear. Sudden severe pain without fever and signs of peritonitis may occur with torsion of the pedicle of a pedunculated myoma. Infarction occurring in a myoma may produce similar symptoms. Severe intra-abdominal hemorrhages have followed rupture of capsular varicosities.

Sarcomatous growth within a fibroid, although extremely rare, cannot clinically be differentiated from benign degeneration. If for no other reason, symptoms and signs suggesting degeneration require immediate operation. Cervix carcinoma complicating a myoma in certain instances may be diagnosed by palpation or inspection and biopsy. Preclinical and preinvasive carcinomas require cytologic diagnosis and biopsy. Corpus carcinoma is not an unusual complication of myoma and should be suspected in the presence of metrorrhagia. The appearance of discharge and bleeding after the menopause must always be investigated. Intermittent, labor-like pains are frequently seen if hematometra or pyometra is present. Dilatation and curettage will confirm the diagnosis.

Randall found adenocarcinoma associated with fibroids in 2.12% of cases. Rodgers in a recent report found that 51% of Negro women past 20 had myomas in contrast to only 19% of white women past 20. In the same study, only 0.6% of the Negro patients had endometrial carcinoma compared to an incidence of 4% among white patients. This certainly suggests that there is no etiologic relationship between myoma and endometrial carcinoma. Carcinoma of the cervix occurs equally in both races, the ratio of cervix cancer to corporeal cancer being 1:3.6 in our series.

The prognosis in myoma uteri is generally excellent; complications, of course, render the prognosis less favorable, especially when operation is necessary in an acute abdominal condition.

TYPES OF THERAPY

The methods of treatment of uterine myomas are: [1] observational or expectant, [2] conservative or symptomatic, and [3] causative or surgical or radiologic.

The character of the symptoms assists in the selection of the method. The cardinal presenting symptoms are: [1] silence, [2] menorrhagia, [3] metrorrhagia, and [4] pain. The silent myoma requires observation; the menorrhagic myoma, symptomatic or radiologic treatment; and the metrorrhagic or painful myoma, surgical treatment.

These methods are not competitive and choice depends upon the exigencies of the case. The gynecologist retains freedom of action in the selection of treatment if he masters the technic of all procedures and the knowledge of their therapeutic limitations.

CHOICE OF TREATMENT

Expectant treatment—An asymptomatic myoma does not require treatment. This presupposes a small tumor localized within the true pelvis. If a myoma grows and rises upward, symptoms appear. The first symptom may be only the cognizance of an abdominal swelling by the patient.

Should a silent tumor be found, it is advisable to inform the patient only of the existence of a "thickening of uterine tissue," to avoid unnecessary worry. Observation consists of careful clinical reevaluation at relatively frequent intervals at the outset to determine the size and status of the tumor. Later, if it is obvious that the tumor is benign and slow growing, the interval between examinations may safely be lengthened.

When sterility or habitual abortion complicates an otherwise silent myoma, myomectomy is indicated. Of course, routine sterility studies must first reveal no absolute infertility. The operation is performed abdominally in the case of intramural, subserous, or intraligamentous myomas. The vaginal route is preferred if the myoma is submucous.

Symptomatic treatment—Myomas are not inextricably linked with disturbances of the menses. The endometrium in the myomatous uterus varies as in the normal uterus. Further, the ovarian changes are similar to those found in normal pelves. Should a myoma be accompanied by profuse and prolonged menses resulting from endocrine dysfunction and the loss of myometrial contractility, numerous symptomatic measures have been proposed to reestablish normal function and tone in the uterus.

Cases associated with a hyperplastic endometrium caused by persistent follicle activity suggest therapy with a potent luteinizing hormone such as human chorionic gonadotropin. Equine gonadotropin, on the other hand, is primarily a follicle stimulator. Progesterone has been suggested to neutralize the effect of estrogen and, also, to inhibit myometrial contractions. Cyclic estrogen-progesterone therapy has been proposed by Hamblen and associates.

Recent reports in the literature suggest androgens, testosterone propionate, for the control of excessive bleeding. This substance diminishes uterine contractility and constricts the uterine vessels so that the tumor is held in abeyance. The results with androgen therapy, especially the return of normal menstrual periodicity, indicate that bleeding is caused by endocrine imbalance rather than mechanical factors. Thyroid substance is frequently effective, especially when excessive bleeding is associated with obesity and hypothyroidism.

Low dosages of x-radiation to the ovaries, hypophysis, and adrenals have been suggested. The hazard to a young patient from such ovarian stimulation is readily apparent. The indiscriminate use of such therapy on the hypophysis and adrenals is cautioned against since the results are problematic.

Atony of the uterine muscle may be observed in women with generalized asthenia. Correction of nutritional faults is of the utmost importance. The asthenic patient frequently benefits remarkably from a diet rich in fats, carbohydrates, and vitamins. Conversely, the menstrual functions of an obese patient may greatly improve after weight reduction on a low caloric diet.

Certainly anemia, foci of infection, systemic disease, and metabolic disturbances must be given adequate attention. If improvement or relief does not take place on such a regime, cau-

sal therapy must be instituted. The social and economic status of the patient should be considered, especially if she must earn a livelihood or tend to the needs of a family. Long-continued invalidism or treatment may be an economic catastrophe.

The age of the patient should also influence the choice of treatment. The young woman should be treated expectantly and repeatedly to conserve the genital organs and functions entirely.

If endocrine therapy and general medical measures do not improve the menorrhagia, curettage should be performed. The curet has been called the best hemostatic measure. It removes the bleeding endometrium, stimulates the tonicity of the myometrium, and regulates ovarian function. About 30% of menorrhagias due to benign causes are arrested permanently by curettage. Not only does the curettage serve a therapeutic function, but it is also diagnostic in ruling out carcinoma of the corpus.

Causal treatment—Causal therapy is surgical or radiologic. The highest ideal of treatment is to remove the myoma and yet preserve the organ with complete function at the smallest risk to the patient. Myomectomy is the method by which this ideal is attained.

Radiation therapy arrests or attenuates the menorrhagia by action of the rays on the ovaries. Temporary or permanent arrest of follicle maturation causes a temporary or permanent arrest of ovulation and menstruation, atrophy of the uterus, and shrinking or disappearance of the myoma. The myoma is left behind but shrinks or disappears in 80% of cases.

Roentgen and radium therapy are safe procedures without mortality. Morbidity, chiefly from menopausal symptoms, follows either form of therapy although the symptoms are less intense after radium therapy. Radium exerts its primary effect on the endometrium, producing atrophy, and acts secondarily on the ovaries. The intensity of the ovarian reaction depends on the distance of the radium capsule from the ovary and the milligram hour dose.

Myomectomy is the only procedure which preserves the uterus and adnexa and their functions. All other surgical procedures remove the uterus with the tumor. Surgery carries a definite mortality, 0.35% in our series, and a variable morbidity depending on the type of procedure and the complications. One must, however, consider that surgery is employed in the removal of myomas without selection and is sometimes complicated by an acute abdominal condition. Radiation therapy, on the other hand, is used in selected cases for small, noncomplicated myomas.

Economic considerations favor radiation therapy. Roentgen therapy after a preliminary curettage requires no hospitalization. Radium therapy necessitates hospitalization of about three days for curettement, inserting of the capsule, and completion of therapy. Surgical treatment requires hospitalization of seven to ten days and a variable convalescence.

The immediate complications of surgical treatment contingent upon technic are injuries to the ureters, bladder, and bowel. Complications

of anesthesia or disturbances of the renal, cardiovascular, pulmonary, and hepatic systems are remote possibilities. These should not occur in the hands of an experienced surgeon who selects patients carefully. Late complications are few and occur with simultaneous extirpation of the ovaries. Bladder disturbances, such as urinary retention and residual urine with subsequent low-grade cystitis and dysuria, are occasionally seen.

The early complications of radiation therapy are practically nil. Radiation sickness is not frequent and when it occurs in the exceptional instance is of short duration. The tumor is reduced rapidly in size and in 60% of cases disappears in nine to twelve months.

The late complications follow the cessation of ovulation and can be avoided by a careful selection of patients. Menopausal symptoms are as a rule slight and not incapacitating and are severe in less than 4% of cases. The exceptions appear in patients with highly neurotic temperaments. Radiation therapy is contraindicated in these cases. One must keep in mind that the juvenile or sexually mature woman suffers more from cessation of ovulation than the woman near the menopause.

Age periods for patients with uterine myomas should be established as follows: [1] the juvenile, up to the twentieth year, [2] the mature, from the twenty-first to the fortieth year, [3] the menopausal, from the forty-first year to the cessation of menses, usually about the fifty-fifth year with uterine myoma, and [4] the senile, from the fifty-sixth year or the menopause onward.

It is apparent that radiation therapy should be used during the menopausal period and only exceptionally during the other periods. The selection of treatment based on the age periods is: myomectomy for the juvenile and mature woman; irradiation therapy during the menopausal period; and radical surgery usually for metrorrhagia and pain, especially during the period of senility, if bleeding begins during this period after amenorrhea of one to two years. Hemorrhages occurring during senility are mostly of the metrorrhagic type. Malignant tumors, either carcinoma or sarcoma, are usually responsible for such latent uterine bleeding.

If a positive diagnosis of uterine myoma cannot be made and the differential diagnosis revolves about degenerating myoma, ovarian cystoma, or tuboovarian inflammatory tumor, surgery is the treatment of choice. The location of the myoma must be considered in selecting therapy. Intramural myomas and subserous myomas with a sessile base may be subjected to radiation. The pedunculated submucous and subserous myomas require surgery.

The size of the myoma also limits radiation therapy. Roentgen therapy may be used for myomas reaching up to the umbilicus, where surgery is contraindicated. Radium therapy should be limited to myomas not larger than the uterus of twelve weeks' gestational size.

Degeneration in myomas always indicates surgical intervention. A clinical differentiation between benign degeneration and the sarcomatous change cannot be made. Pain,

whether from pressure, degeneration, inflammation, infarction, axial rotation, or infection, constitutes an acute abdominal condition requiring surgical treatment.

SUMMARY OF INDICATIONS

Radiation therapy is indicated in menorrhagic intramural and nonpedunculated subserous myomas, provided there are no adnexal complications, degenerations, or doubts in diagnosis in carefully selected patients 40 years or older. Irradiation should be used for patients who are poor surgical risks. Radium may be used in uteri not larger than the uterus of twelve weeks' gestation, while roentgen rays may be used in uteri of a size comparable to a twenty weeks' gestation.

Surgical treatment is indicated for women 40 years or younger and for metrorrhagic myomas during senility, for painful myomas, for pedunculated, infected, or degenerated myomas in women of all ages, and when diagnosis is doubtful. Severe degrees of anemia following long-continued or sudden excessive hemorrhages must be corrected by whole blood replacement.

SURGICAL PROCEDURES

The methods are [1] myomectomy, [2] severance of the pedicles of pedunculated submucous and subserous myomas, and [3] hysterectomy. The route is either abdominal or vaginal.

Indications for conservative operations are the preservation of uterine and ovarian function in the juvenile and mature patient and the conservation of remaining ovarian function in the clinically menopausal and even senile patient.

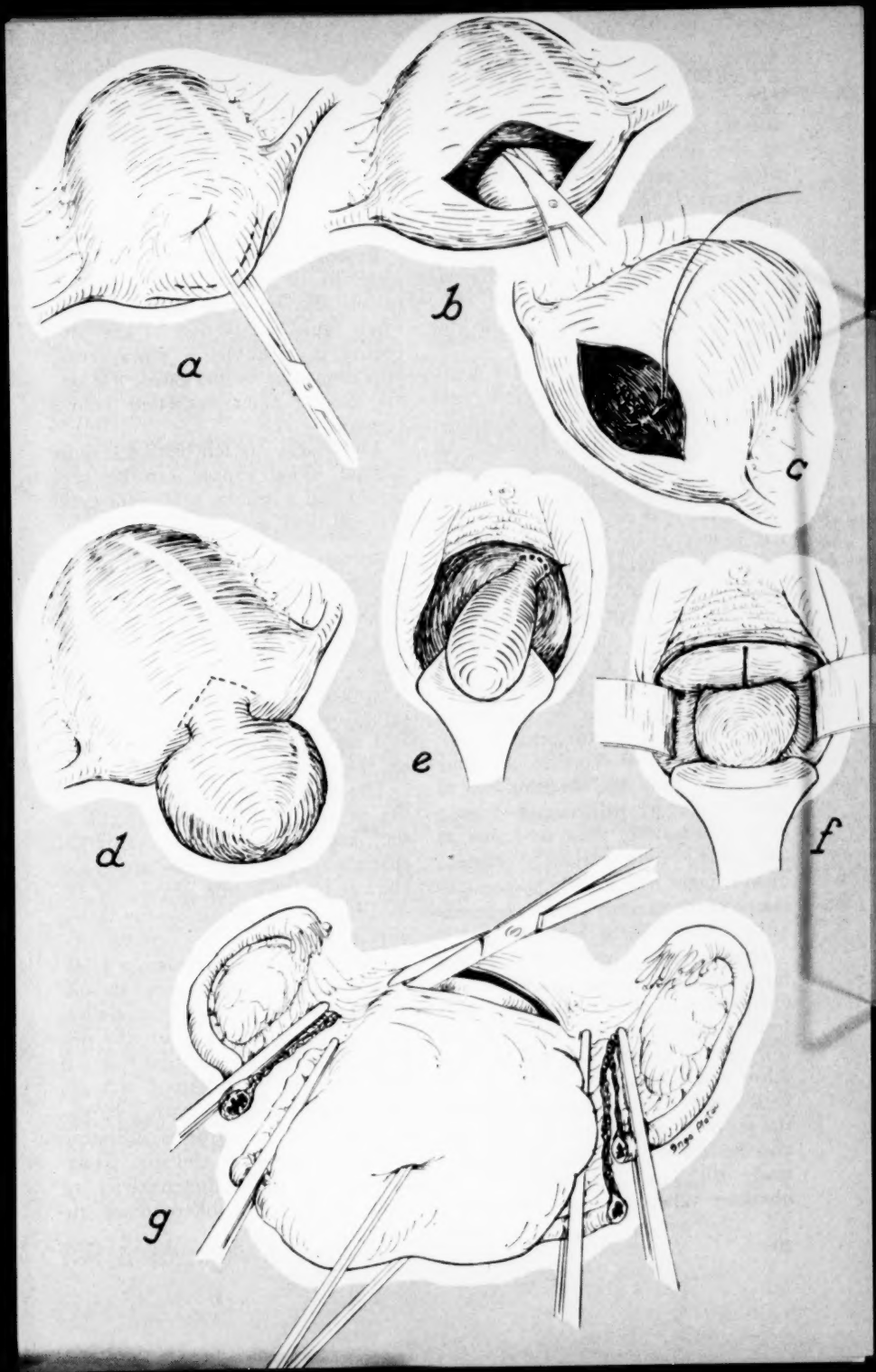
Myomectomy—Myomectomies are best performed through laparotomy incisions. The uterus is caught with a tenaculum forceps placed on the upper and lower ends of the myoma. Traction on the forceps is an aid in controlling bleeding. An incision is made between the forceps, through the perimetrium, down to the capsule until the myoma begins to protrude through the incision (Fig. *a*). Enucleation is completed with curved dissecting scissors (Fig. *b*).

One should endeavor to remove as many fibroids as possible through a single incision. Complete hemostasis is mandatory, but it is neither wise nor necessary to work in an ischemic field achieved by applying a tourniquet or clamps to the cardinal ligaments. The endometrium should not be opened unless absolutely necessary.

The bed of the tumor is obliterated with catgut sutures, the superfluous portion of the uterine wall is removed, and the uterus is closed in layers (Fig. *c*). If an extensive uterine plastic operation has been performed with enucleation of many myomas, symmetry may not be regained for three months.

Pedunculated subserous myomas are removed by a V-shaped incision of the base of the pedicle (Fig. *d*). The incision is then closed with catgut sutures.

Pedunculated submucous myomas are removed by the vaginal route (Fig. *e*). If borne into the vagina, one must determine if the fundus is inverted. If inversion is feared or has occurred, the pedicle is incised with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scissors in a circular fashion close to the myoma. Should the pedicle bleed, a ligature is tied around it. If inversion, either partial or complete, has occurred, digital replacement should be attempted. It is sometimes necessary to dilate the cervical canal first. If reposition fails, an anterior hysterotomy is made and reposition accomplished.

Should the pedunculated submucous myoma lie in the cervical canal or in the uterine cavity, access to the pedicle is gained through an anterior hysterotomy, splitting the anterior cervical wall in the midline to the internal os (Fig. *f*). The pedicle is severed or twisted off.

The remarkable fetal salvage in properly selected cases in the juvenile and mature groups justifies conservative surgery. It varies in reported studies from 3 to 38%.

The patient must be informed of the 3 to 11% chance of recurrence and that in 25% of cases menorrhagia will persist. Further, she must be aware that the decision as to whether surgery will be conservative or not sometimes must be made at the time of operation. Persistent menorrhagia will usually respond to symptomatic therapy. Recurrences require irradiation or hysterectomy.

Hysterectomy and panhysterectomy—If the decision is made to remove the uterus, total abdominal hysterectomy is the therapy of choice (Fig. *g*). In well-trained hands, mortality and morbidity are no greater with total hysterectomy than with the supravaginal procedure. This fact and the menace of stump cancer have made the latter procedure almost obsolete. When correctly performed, the incidence of bladder, ureteral, and bowel complications is negligible. Shortening of the vagina, a complication sometimes described with the total operation, can be avoided.

In some instances, with severe endometriosis or chronic pelvic inflammatory disease, or in poor-risk cases when rapid completion of the procedure is desirable, a supravaginal operation may be indicated, the cervix having been evaluated before surgery.

The ovaries are left behind if their normal blood supply can be preserved and a definite reason for their removal does not exist.

RADIATION PROCEDURES

The radiations used in the treatment of uterine myomas are roentgen and gamma rays or radon, either singly or, exceptionally, combined. Roentgen rays primarily cause a cessation of ovulation, while radium rays act primarily and destructively on the endometrium.

The muscle cells of the myometrium as well as the epithelial cells of the endometrium show radiation changes. The reactions are most marked in the young connective tissue fibers and especially in the young muscle fibers of the myoma. Although the tumor is benign, a retardation and incompleteness in differentiation of the cell components must be present to explain the different behavior in radiation reaction from that of the adjacent, normal, adult cells of the same type. The rapid absorption of myomas following adequate radiation therapy is explained by the radiosensitivity of their incompletely differentiated tu-

mor cells. This is frequently seen within two to four weeks after treatment, even before ovulation has ceased.

Roentgen treatment—A dose of roentgen rays necessary to cause permanent cessation of ovulation has been determined as 35% of an erythema skin dose applied at the ovaries. As measured at the ovary, the dose necessary to produce permanent cessation of ovulation is approximately 500 r.

The dose is delivered through two portals, one suprapubic and one sacral. The kilovoltage is 200. Even with an unusually large anteroposterior diameter and the use of cross-firing through two fields, the skin dose is approximately half an erythema skin dose. As a result, permanent skin changes are never seen.

Temporary menolysis has been charged with causing injuries to the genes or chromosomes and subsequently mutations and congenital deformities. Mann and Müller produced mutations in fruit flies with roentgen rays. Nürnberger, Little, and Brasch, however, did not observe abnormal mutation rates in mammals after many generations. Recently Kaplan reported that no harmful effect was noted in either first or second generation progeny of 413 sterile women treated with x-rays.

Radium treatment—The indications for radium treatment of uterine myomas are the same as those for roentgen treatment, except that the myomatous uterus should not be larger than a uterus at the end of the first trimester of pregnancy.

The advantages of radium treatment over roentgen are that radium arrests bleeding sooner and causes less intense menopausal symptoms.

The disadvantages of radium therapy are: [1] Hospitalization and anesthesia are necessary. [2] Morbidity may follow trauma with subsequent infection. [3] The cauterizing action on uterine tissues causes a profuse watery discharge that lasts two to six months. This discharge is never observed after roentgen treatment. [4] The tissues in the region of the internal os may be destroyed with resultant stenosis and retention of uterine secretions forming hydrometra or pyometra. The local instrumentation and trauma plus the cauterizing action of radium on the uterine mucosa make downward displacement of the intrauterine radium carrier an ever present danger.

The radium dose which assures a complete amenorrhea is about 1,800 mg. element hours. A 2-mm. brass capsule containing 50 mg. of radium is inserted into the uterine cavity for thirty-five hours.

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(Continued on page 202)

Prolapse of the Uterus and Vagina

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Prepared for Modern Medicine

ADEQUATE and functional repair for uterine prolapse is probably the most complicated operation in gynecologic surgery. The multiplicity of organs involved as well as the effects on the physiology and psychic well-being of the patient require a nicety of judgment acquired only by long experience and frequent review of results.

The variety of procedures described in the literature makes it self-evident that none produces uniform or satisfactory results. The rate of recurrence reported by the most competent plastic surgeons ranges from 5 to 35%. As one might expect, the more stringent the criteria used as a measure of cure and the longer the observation, the more numerous the total or partial failures. Goff [1] states that all recurrences in his series were evident within six months. Several of ours have appeared later.

Complicating pathology in the uterus or adnexa may urgently require operation, yet the procedure necessary for its cure may not be the ideal one for the prolapse.

Most competent observers are now agreed that operations designed to suspend the prolapsed pelvic organs from the abdominal wall or elsewhere in the abdomen are dangerous, unsatisfactory, and should not be used. The only exception is in the case of the occasional young woman whose symptoms of prolapse demand prompt relief, who still desires children, and whose uterus has normal anatomy and physiology. For such a patient, some form of reposition of the retroverted uterus by shortening or plicating the round, broad, or sacrouterine ligaments may be helpful in relieving strain on the remainder of the lower pelvic repair. These methods of attaining normal anatomic relationships are ineffective without coincidental readjustment of the midpelvic supports by anterior colporrhaphy as well as perineal repair.

Unphysiologic attempts to plug the hole by using the entire uterine body or portions of it have been discontinued by most gynecologists, although a few competent surgeons still utilize the interposition type of operation in selected cases.[2-4] Subsequent postoperative disturbances of the urinary functions and late complications have overcome its former popularity.

Plastic repair of the perineum is an essential step in the cure of prolapse, although descensus may occur through the introitus of a multi-

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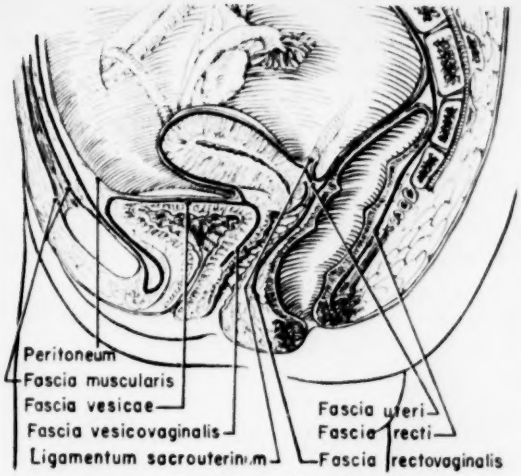


Fig. 1. Sagittal section of pelvis

parous woman, overlying an apparently intact perineum. Certainly, a rectocele or enterocele should be repaired if the perineal floor is relaxed. Symptoms of the protrusion of the posterior wall are frequently as annoying to the patient as the original prolapse.

The extent of the posterior repair should be determined by the location of the relaxation and should at least encompass the lower two-thirds of the vagina and the perineal body. If a low-lying posterior cul-de-sac or enterocele exists, the repair should include obliterative procedures such as suturing the sacrouterine ligaments together or excising the hernial sac.[5,6] A meticulous reapposition or reduplication of the musculofibrous elastic tissues which surround and fuse with the vagina and muscles in this area should completely reduce the protrusion of the anterior rectal wall.

Doubt has been cast on the role of the perineal floor in the support mechanism of the pelvic organs, but almost everyone is agreed that the floor is of paramount importance as a plane of resistance to descent and to relieve strain on those important musculofibrous elastic connections in the midpelvis. To achieve the greatest resistance to descent, the plane of the reconstructed vagina must be returned to its original near-horizontal position, directed downward and backward toward the hollow of the sacrum.

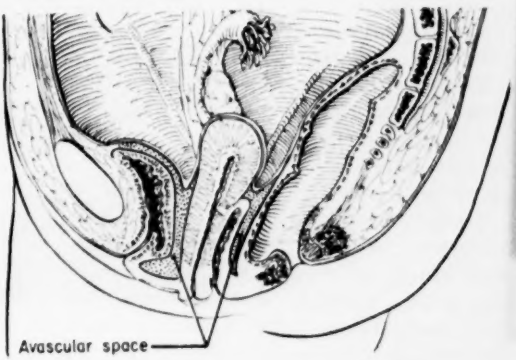


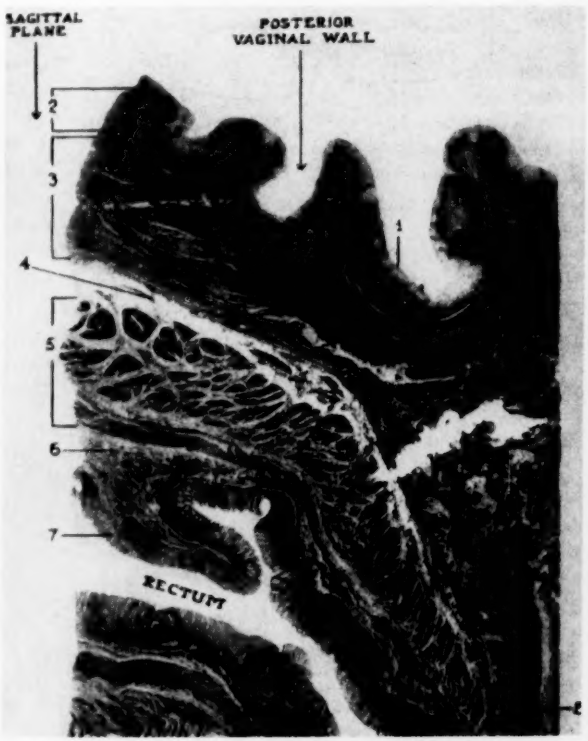
Fig. 2. Elongated prolapsed cervix under traction, showing avascular spaces between the vaginal wall and the bladder and rectum. Loosely packed areolar tissue in this area makes dissection simple and almost bloodless.

The repair of the midpelvic supports, which many students believe are the only supports of consequence, requires a refinement and variation of technic to fit the exigencies of the case. If the patient has passed the menopause and the uterus or its appendages are benignly diseased, vaginal removal is indicated, followed by careful bloodless reapposition of the fibromuscular elastic sheath which surrounds the cervix and vagina as it extends from the base of the arcuate ligament to the perineal body (Figs. 1-3).[7-9]

If the patient is still in her functional years and desires additional children, some form of anteroposterior colporrhaphy, either with or without fixation of the lateral (Mackenrodt) ligaments to the anterior surface of the cervix,[10] produces good results.

Many American[4] and almost all English clinics prefer this general type of Manchester-Fothergill-Donald[11] operation for patients who have first- or second-degree prolapse and normal uteri. With complete prolapse, the consensus in America is that the uterus should be removed.

For elderly patients, to whom coitus is no longer important, or possibly for a very few patients in the later years of life who have had previous repair, some form of colpocleisis may be considered. Colpocleisis may be incomplete, as in the Le Fort



Surg., Gynec. & Obst. 52:39, 1931.

Fig. 3. Highpower of vaginal and rectal wall. [1] Epithelium of vaginal mucosa, [2] fibroelastic tunica propria of vaginal mucosa, [3] muscular coat of vaginal wall, [4] rectovaginal layer of areolar tissue, [5] muscular coat of rectal wall, [6] submucous coat of rectal wall, [7] rectal mucosa, and [8] rectal layer of fascia endopelvina.

operation, or, rarely, complete obliteration of the vagina is chosen. These procedures are attended with little shock and may be advisable for elderly women who are otherwise poor surgical risks.

However, these operations are not physiologic and, if future difficulties such as pyometra or carcinoma occur, diagnosis is delayed and treatment is very difficult or inadequate. The integrity of the false septum formed by Le Fort's operation depends on adequate healing between the anterior and posterior vaginal walls. Tissue resistance and healing potential are diminished in elderly women so that even these procedures do not always have perfect results. We have had 1 complete failure in our series.

Recently we have employed vaginal hysterectomy and repair more frequently than the obliterative procedure for this type of patient. Because of better pre- and postoperative care, improved anesthesia, early ambulation, and the use of antibiotics, senility and general physical disability are not now such important contraindications to major surgery as formerly.

The general attitude of our gynecologic service has been both conservative and radical; conservative for the younger patient still desirous of having children, and radical after this period is passed. We believe that the retention of a mutilated uterus after its main function of childbearing is completed may actually be more radical than its removal.

We are not convinced by the inconclusive evidence to date that hysterectomy influences ovarian function and precipitates an early menopause. The temporary vasomotor symptoms that frequently follow a hysterectomy are not peculiar only to the menopause; these may occur at any age after any gynecologic procedure, however simple. A substantial number of our patients who have been subjected to hysterectomy either show no untoward symptoms of the menopause or their appearance is delayed until the time when they would have occurred without operation.

Adequate preoperative education of the patient concerning the anatomic changes that occur in hysterectomy and what alterations she may reasonably expect in her physiology will do much to avoid those psychic and vasomotor postoperative phenomena which are too frequently interpreted as menopausal symptoms. Once their families are completed, most of these patients are delighted to be relieved from the unpleasant aspects of menstruation, the recurrent fear of additional pregnancies, and the constant threat of uterine or cervical malignancy that they hear so much about in today's program of cancer control.

For the younger patient with prolapse who is still desirous of children, it has been our custom to use palliative measures, such as the ring type of pessary, whenever possible. The patient is encouraged to complete her family quickly, so that a repair may be done which will adequately relieve her of all symptoms.

If the prolapse symptoms are too pronounced or cannot be so readily relieved, simple anterior and posterior colpoperineorrhaphy may be

combined with a shortening or reduplication of the round or broad ligaments. With simple retroversion of the uterus, reposition of the mobile uterus may be accomplished through the vagina. If the uterus is retroflexed, the abdominal approach may be the procedure of choice.

Differentiation between simple retroversion of the uterus and the retroflexed variety can be made by the marked shortening in the anterior fornix of the vagina with the consequent limitation of mobility characteristic of retroflexion. The correction of this malformation is usually most readily accomplished by laparotomy. In our experience, decreased fertility, spontaneous abortion, and dystocia have been less frequent after this combined procedure than after the Manchester type of repair as reported in the literature. However, the Manchester type of repair is without question more effective than the simpler colporrhaphy in permanently relieving the symptoms of descensus.

It is now generally conceded that the most important lesion in prolapse of the uterus is a stretching or broadening of the fibromuscular elastic tissues surrounding the cervix and vagina, which suspend them from the lateral pelvic walls principally in the region and at the level of the cardinal ligament.[1,5,12] Elongation or hypertrophy of the cervix and a cystocele or rectocele are usually present. Our attitude has been that exposure of the cardinal ligaments and their necessary shortening or reduplication can be more accurately and readily accomplished when the uterus and elongated cervix have been removed than when portions of either are retained. Shortening of the lateral ligaments by an amount corresponding to the width of the cervix is often sufficient to retain the vaginal vault at its normal level in the pelvis.

The ureter is usually displaced in prolapse. Great care should be exercised during the division or shortening of the lateral ligaments to prevent ureteral damage.

The number of patients whom we have seen with prolapse of the cervical stump, stenosis of the retained cervix, persistent leukorrhea, or carcinoma in the stump has made us loathe to retain any portion of the stump during repair for prolapse. Amputation of the cervix will shorten it and remove the portion in which carcinoma most frequently occurs. However, in our experience, a sufficient number of postoperative hemorrhages, stenoses, disagreeable discharges, and the rare carcinoma have led us to discontinue use of amputation for many years.

Richardson[13] and TeLinde[14] have reported excellent results with the operation devised by the senior author which retains the mid-upper portion of the cervix. These authors attribute their good results to the fact that the tissue and blood supply in the main supportive area have not been interfered with. While such theoretic considerations are undoubtedly true, we believe that the retention of a fraction of a still functional portion of the cervix will eventually produce sufficient postoperative complications to make it comparable to the other types of interposition operations.

The proper placement of the

clamps and the sutures during a vaginal hysterectomy automatically shortens the overstretched lateral ligaments; in this area that is so very well supplied with blood vessels, we do not believe that the crushing or ligation produces sufficient tissue necrosis to interfere with proper healing. In our opinion, the fine surgical technic of the few men who have reported most extensively on this technical composite operation accounts for their excellent results, rather than does the retention of the cervix. The operation has not been accepted widely and complete evaluation, therefore, cannot be made.[11,16]

Am. J. Obst. & Gynec. 12:481, 1926.

Fig. 4. Interlacing of musculofibrous elastic tissue between vaginal mucosa and bladder wall

For the repair of complete and second-degree uterine prolapse, as our experience with it has increased,[17] we have more frequently used vaginal hysterectomy by the Heaney[15,16] technic, combined with anteroposterior colpoperineorrhaphy. Spaulding[18] has abandoned supravaginal hysterectomy in the treatment of uterine prolapse on account of the increased difficulties with adequate hemostasis.

We prefer vaginal hysterectomy in 90% of our patients, combined with widespread dissection of theoretic fascial planes. Separation of the interlacing blood vessels and musculofibrous elastic perivaginal tissue increases the difficulty in hemostasis (Fig. 4). We do not attempt to separate the perivaginal tissues into fascial planes because they have not been demonstrated histologically and we have been unable to demonstrate them at operation. We depend on minimal dissection to replace organs in their normal position and reapposition or reduplication without undue tension of not only the musculofibrous elastic perivaginal envelope but also the accessory ligaments which aid in pelvic equilibrium.

Reattachment of these divided structures to the vaginal vault can

be more accurately done if close attention is paid to the place where the greatest amount of "give" occurs during their division. We are rather well convinced that failures occur, not because the uterus is removed from the vaginal vault, but usually because of:

- Faulty technic in attaching the supportive tissue in the proper place
- Imperfect hemostasis
- Operating in the presence of an unrecognized or inadequately treated local infection, such as *Trichomonas, Monilia,* senile vaginitis, or infected decubitus ulcer of the cervix
- The general unhealthy state of tissues encountered in the majority of patients with prolapse, usually resulting from abnormal nutritional balance

Perfect hemostasis is a cardinal rule in all surgery. Hematomas separate more suture lines than do straining, coughing, or vomiting. Hemostasis is generally less perfect in vaginal surgery than in any other type of major surgery.

Elective repair of abdominal and inguinal hernias is not undertaken in the face of a local furunculosis. Elective repair for procidentia is regularly undertaken with no or, at best, a very desultory attempt to rid the vagina of abnormal bacteria and to obtain a normal culture for Döderlein's bacilli. The lacerated vagina after delivery heals well and accurately without suturing, if infection is not present. The importance of infection in plastic surgery elsewhere in the body has been constantly stressed but is rarely if ever mentioned in repair in the pelvis. In our series of 354, the proportion of infected patients who returned with recurrence of their prolapse symptoms was 25%.

It has been well recognized for many years that the obese patient is a poor surgical risk[18] and more apt to develop postoperative incisional hernia. As a result, many general surgeons do not undertake elective major abdominal operations until the patient has reduced. This is especially true in repair of the abdominal wall.

Prolapse of the uterus, cystocele, enterocele, and rectocele have all been called hernias of the pelvic floor. Schumann[19] says that he has long been convinced that simple mechanical factors are not sufficient to explain the occurrence or recurrence of prolapse of the pelvic organs. He suggests that some systemic condition, such as defective carbohydrate metabolism, is a factor in loss of tissue tone. Norris and Kimbrough[20] assert that cystocele is much more common in stout than in thin women. These authors also reemphasize that absolute hemostasis is essential to good healing.

In our series of 354 patients, weights were recorded for 289. Of these, 68.4% were overweight and 15.9% were underweight. Of the 37 patients who had postoperative recurrences of prolapse, the weight was unrecorded in 4. Of the remaining 33 patients, 23, or 69.7%, were overweight and 2, or 6.6%, were underweight.

In this series, 28 patients had been previously operated upon one or more times elsewhere for prolapse. The total number of these operations was 31. Of these patients, 19 were completely relieved by our first repair; 9 had one or more recurrences, totaling 15 operations for

cure. One of the latter patients still has a small symptomless protrusion of the anterior vaginal wall.

Our primary rate of recurrence for patients who had not been operated upon by other surgeons was 2.8%. However, if we add to this figure the patients described above who had been previously operated upon elsewhere, the over-all recurrence rate becomes 5.3%. All of these private patients came to the office for their six-week postoperative check and, with few exceptions, returned at six months or longer intervals for recheck. During the last year, 127 of them have been examined. The entire group has not been contacted within the last year, so that some may have developed symptoms and gone elsewhere. We believe, however, that in this selected group of private patients the number would be very small.

The operation chosen for 271 patients was vaginal hysterectomy combined with anterior or posterior repair, or both. Among the younger group, 80 were relieved by some form of anterior and posterior colporrhaphy, occasionally combined with a Manchester type of operation. The vaginas of the remaining few were incompletely closed by the Le Fort procedure.

It is obvious that no single operation can be used for the cure of uterine prolapse and its associated lesions. Operations should be chosen that will relieve the patient as completely as possible and yet will retain the opportunity for future childbirth wherever that seems desirable or advisable. All operations yet devised are followed not only by a certain number of recurrences but also by disturbances of physiology and structure of organs that are inimical to the patient's health and function. The summation of the immediate and delayed favorable or unfavorable effects should determine the choice of procedure.

We believe that the simplest form of an anterior colporrhaphy and an adequate perineorrhaphy, combined when necessary with an anterior reposition procedure, is the method of choice for those patients with normal organs who are still desirous of children and who have first-degree prolapse.

When second-degree procidentia is present, it is ordinarily necessary to produce more lateral ligament fixation by some modification of the Manchester-Fothergill-Donald procedure or to remove the uterus. We prefer to remove the uterus unless it is desired for future pregnancy.

Third-degree or complete prolapse, in our opinion, is treated best by vaginal hysterectomy and a meticulous realignment of the pelvic supports.

Histologic and clinical observations indicate that the most important supportive tissue in the female pelvis is an interlacing, dense musculofibrous elastic layer containing blood vessels which is continuous with similar tissues of the torso. Minimal dissection to attain reapposition without undue tension should be as cardinal a principle here as for plastic surgery elsewhere. By the same rules of surgery, absolute hemostasis should be striven for at all times.

Eradication of local as well as dis-

tant foci of infection is a prerequisite of healing by first intention.

The concentration of the supportive tissue around the larger blood vessels in the lateral (cardinal) pelvic ligament constitutes the principal support of the uterus and vault of the vagina. The sacrouterine, round, and broad ligaments probably help to maintain the directional equilibrium of the pelvic organs and should be utilized in their repair. Realignment of the direction of the vaginal canal by proper perineal repair increases the resistance to descent of the remaining organs.

Until better technical operations are devised, our final results will depend on the following principles:

- Exact knowledge of the histology, physiology, and anatomy of the organs involved
- Experienced awareness of the degree and component parts of the prolapse
- Precise knowledge of the technic undertaken
- Constant use of all the general cardinal rules of surgery:
  - Minimal dissection and care of tissues
  - Accurate hemostasis
  - Strict asepsis
- Adequate pre- and postoperative care
  - Maintenance of fluid, mineral, and vitamin balance
  - Maintenance of normal postoperative elimination from the bladder and bowel
  - Pre- and postoperative nutritional balance; return of weight to normal levels
  - Eradication of general and local foci of infection

The primary recurrence rate of 2.8% or the over-all rate of 5.3% may be considerably lowered by a close application of these principles.

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Ovarian Tumors

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Prepared for Modern Medicine

The ovary produces not only the ovum for the perpetuation of the race but also a greater variety of tumors than any other organ. This latter fact might well be expected when we consider the embryologic origin of the ovary, its active function, its normal physiologic changes during a lifetime, and its susceptibility to extraovular influences, such as hormone imbalance, infection, and circulatory changes.

The ovarian tumors range from benign to malignant, with those classified as benign having malignant family members and those classed as malignant having apparently benign members, and all with varying degrees of malignant potentiality. In size, ovarian tumors vary from tiny cysts scarcely visible grossly to tremendous ones that almost obscure the host. The largest recorded, states Novak, was a Texas pseudomucinous cystadenoma weighing 384 lb.

Ovarian tumors may be classified differently, and no classification is as yet completely satisfactory. The embryology, histology, and physiology are not as yet completely understood and considerable work along these lines is still in progress. Research in hormones, tissue culture, vital staining, radiation reactions, and the like is contributing almost daily to our information and making a more satisfactory classification nearer.

A few ovarian tumors fortunately give rise to subjective symptoms and thus cause the patient to seek medical advice earlier than do the more common asymptomatic tumors. However, most ovarian tumors are asymptomatic in the early stages because the ovary is suspended on a movable pedicle and can expand in the large abdominal area without embarrassing surrounding structures. Thus a malignant tumor often is advanced before recognized. This accounts for the high mortality of ovarian cancers.

Since we are primarily clinicians, J. V. Ricci's classification of ovarian neoplasms based on clinical manifestations, histologic structure, and incidence of occurrence is listed here to give the scope of the problem (*Diagnosis in Gynaecology*, Blakiston Co., Philadelphia, 1948).

I. Non-neoplastic distention cysts
   Follicle distention cyst
   Corpus luteum cyst
   Germinal inclusion cyst
II. Non-neoplastic endometrial cysts
   Endometrioma (chocolate cyst)
III. Benign proliferative cysts
   Serous cystadenoma
   Pseudomucinous cystadenoma
   Cervical cyst

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IV. Benign solid tumors
- Fibroma, lymphangioma
- Fibroadenoma, hemangioma
- Brenner tumor

V. Malignant proliferative cysts
- Serous (papillary) cystadenocarcinoma
- Pseudomucinous cystadenocarcinoma
- Carcinomatous dermoid cyst

VI. Malignant solid tumors
- Primary solid carcinoma (carcinoma simplex), medullary carcinoma, adenocarcinoma, alveolar carcinoma, plexiform carcinoma, scirrhous carcinoma
- Primary sarcoma
- Teratoma
- Teratoid tumor (mesonephroma)
- Dysgerminoma
- Metastatic adenocarcinoma (Krukenberg)
- Functioning tumors
  - a] *Feminizing* (estrogenic) Granulosa cell, thecoma (theca cell), luteoma
  - b] *Masculinizing* (androgenic) Arrhenoblastoma, Adrenaloma

As an approach to the subject, let us discuss some of the perplexing questions that occur frequently and that the clinician might ask a consultant—or himself. In the answers we attempt to present a consensus of leading American gynecologists obtained from current literature and recent texts.

• *Does the patient have an ovarian tumor?*

The pelvic examination remains one of the most difficult procedures in gynecology and many an abdomen has been opened for a "cyst" that wasn't there. The difficulties of diagnostic pelvic examination arise from obesity, the patient's natural apprehension, pain, rough approach, or wrong positioning of the patient. It has been some time since many of us "looked in the front of the book," so it may not be remiss to note here some aids to pelvic examination:

1] Place the patient on a firm examining table. Bed examinations give both examinee and examiner unadvantageous positions.

2] Use instruments cautiously, exerting needed pressure posteriorly against the perineum rather than against the sensitive anterior structures.

3] Have the patient relax the rectus muscles by keeping her arms at her sides and exert pressure with expiration.

4] When examining a child, first attempt a rectal examination in a lateral position, since this may achieve better relaxation.

5] When attempting a critical examination under anesthesia ask the anesthetist to give a deep enough anesthetic for a short period to relax the recti. It is not unusual for the recti to remain more rigid with light anesthesia than with the patient awake.

• *I have a patient with an asymptomatic, "orange-sized" cyst. Should it be removed?*

This question is confusing because one cannot tell whether the questioner is referring to the large California orange or the pyknotic orange of another state. If all doctors would memorize the measurements of one of their fingers in centimeters, such as nail width and distance between joints, a reasonably accurate rule would always be at hand, and the method of measurement by comparison with various agricultural products would pleasingly disappear.

Let us assume that the cyst mentioned above measures 5 to 6 cm. in diameter and is freely movable. This is likely to be one of several distention cysts which often regress either spontaneously or with the aid of hormones. Many patients "go

shopping" when major surgery has been recommended and this is *one* explanation for the phenomenon of one doctor finding a cyst and another not.

It is generally felt that a patient with such a tumor should be examined at regular intervals for evidence of growth. If a true neoplasm, the tumor will continue to grow and early operation is then indicated.

• *At operation I found several small distention cysts of the ovary. Should I resect, aspirate, or remove the ovary?*

The ovary should be left alone or the cysts simply aspirated. Resection may interfere with the ovarian blood supply or cause adhesions to form.

• *A patient has an ovarian cyst which is too large to remove through the incision. Should I enlarge the incision or aspirate the cyst?*

It is advisable to enlarge the incision and remove the cyst intact. The cyst may be malignant or a pseudomucinous cystadenoma and aspiration may well produce spill of fluid containing viable cancer cells capable of peritoneal implantation or may cause the development of pseudomyxoma peritonaei. If aspiration must be done, all the usual precautions against spill have to be taken and, if these are properly accomplished, more time is consumed than is required to enlarge the incision.

• *I have just removed a large serous cyst from the right ovary of a 45-year-old woman. The left ovary and uterus appear normal. Should I remove the ovary and uterus?*

A few years ago, most gynecologists would have recommended removal of the normal ovary and the uterus at or near the menopause to prevent possible later disease. Now, a few authorities are pleading for conservation of the normal appearing ovary in order to utilize the low-grade function of the ovary between the menopause and senescence. When one thinks in terms of the high mortality that is associated with ovarian carcinoma and its possible development in the postmenopausal years he is more inclined to be "radical," particularly since potent hormones are available for substitution therapy if necessary.

• *I have just removed a 10-cm. chocolate cyst of the left ovary. There are several endometrial implants on the pelvic peritoneum. Should I do a "radical" operation?*

As more reports of conservative therapy of endometriosis have become available, it is obvious that the physician is justified, particularly with young women or those without children, in following a conservative course, using resection or cauterization of visible "implants" and even leaving unresectable small lesions in the rectovaginal septum.

• *Last week I removed an ovarian cyst from a patient. It looked benign but the pathologist found a papillary cystadenocarcinoma. Should I reoperate or give roentgen therapy?*

The patient may have tumor in the other ovary which has been overlooked and even endometrial metastasis may have occurred. Early reoperation with completion of radical surgery is probably indicated. By radical surgery, most gynecologists mean a bilateral salpingo-oophorec-

tomy, total hysterectomy, and resection of visible implants. Metastasis via lymph nodes is usually a late phenomenon.

Most authorities favor roentgen treatment for ovarian cancer, both postoperatively and for palliation. Many ovarian cancers are radiosensitive and also the channels of spread are more easily exposed to radiation therapy than with breast cancer.

In ovarian surgery, the greatest protection to the patient is for the surgeon to have a good working knowledge of gross pathology. Even frozen sections are frequently unsatisfactory and often multiple fixed sections and considerable critical study on the part of the pathologist are necessary before he can make a definite diagnosis.

At operation, observe the peritoneal fluid. Increased amounts, particularly if the fluid contains blood, may indicate malignant change. Examine the peritoneal and tumor surfaces for evidence of implants or extension through the capsule. The liver and gastrointestinal tract should be palpated, for the ovarian tumor itself may be metastatic. Circumscribed firm warty growth on the inner or outer surface of a cyst may well result from benign papillary growth of a multilocular cyst and so is not necessarily evidence of malignant change.

Upon removal, every ovarian cyst should be immediately opened for identification, preferably by the pathologist. A large percentage of tumors will fall in the classification of benign proliferative cysts, the serous cystadenomas, pseudomucinous cystadenomas, or dermoid cysts. The fluid content of the cyst—thin, thick mucinous, or oily with hair—will usually identify the cyst. Look for soft, diffuse, "active looking" papillary growth which often indicates malignant change. If found, radical operation is necessary.

• *What is the recommended treatment for an apparently advanced ovarian malignant tumor with ascites and chest fluid?*

One should make a definite diagnosis by examining cells from aspirated fluid or by operation with biopsy. Occasionally, one will be pleasantly surprised during these diagnostic procedures to find a well-encapsulated ovarian tumor such as fibroma, Brenner tumor, or granulosa-cell tumor with ascites and hydrothorax (Meigs' syndrome), when the original impression was one of hopelessly advanced ovarian malignant tumor.

In some instances of advanced ovarian cancer, preoperative roentgen therapy may improve operability by causing resorption of fluid and decreasing the size of the tumor masses. At surgery, as much of the tumor should be resected as is practicable so that there will be less tumor mass for subsequent roentgen therapy to deal with.

• *How should one proceed when a solid or semisolid ovarian tumor is found at operation?*

The surgeon here has the difficult task of grossly differentiating between the benign and malignant solid tumor groups. His exploration must be thorough, looking for metastases, tumor in the other ovary, and extragenital primary tumor before he decides to follow a conservative course of simple oophorectomy or possibly

excision of the growth from the ovary.

The benign solid tumors—fibroma, fibroadenoma, and Brenner tumor—are usually sharply demarcated from adjacent tissue by a firm capsule. This benign family has very few malignant members and conservatism is indicated.

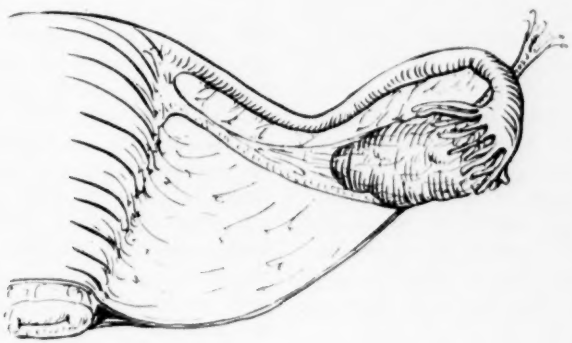
The functional tumors are also solid grossly or may, like other solid ovarian tumors, have some degenerative cystic changes. The fact that they are functional aids the surgeon in identification. This group has relatively few malignant members and simple salpingo-oophorectomy is indicated in young women when no gross evidence of malignancy is found.

The tumor under question may also be one of those classified under malignant solid tumors. Then, radical surgery is done, followed by roentgen therapy. The dysgerminoma occurs predominantly in young women. There has been a strong tendency to treat this condition conservatively when the tumor has apparently not metastasized. However, as more reports of this relatively rare tumor appear, it becomes increasingly apparent that a high mortality is associated with it and that conservatism is hard to justify.

A fairly good rule to follow in regard to solid ovarian tumors is: if the growth is not discrete or a very well-encapsulated functional tumor, treatment is radical.

Finally, it is imperative that the surgeon treating ovarian disease be familiar with the history of the patient and have evaluated her psychologically. The ideal treatment for a particular tumor may not be the ideal treatment for the particular patient, and we must, therefore, be able to weigh the facts and arrive at a decision.

In discussing a proposed operation with the patient, the surgeon should emphasize his desire to be conservative but also state that he must have her permission to do what is necessary to cure her. True enough, an occasional patient will refuse operation rather than give full permission, but even that is cheap insurance.



Diseases of the Vulva

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Prepared for Modern Medicine

THE vulva is one of the most sensitive areas of the body surface. Not only is it the site of local infections and tumors, but it often reflects the reactions of the skin to systemic disease.

Vulvar structures are external to the hymenal ring. The labia minora and clitoris are devoid of sweat glands and hair follicles but contain an abundant number of sebaceous glands. The labia majora, mons veneris, and perineum have a well-developed horny epithelium, with many hair follicles and sweat and sebaceous glands. A dense network of blood and lymphatic vessels and nerve fibers spreads out in the most superficial part of the corium underlying the epithelial surface. The epidermis of the vulva shows no evidence of cyclic changes such as are seen in structures of müllerian duct origin.

Constant contamination, moisture, warmth, and trauma increase the metabolic needs of the vulvar epithelium. When body resistance is lowered, the vulva becomes a vulnerable area for skin disorders.

Subcutaneous areolar tissue, folds of epithelium, and many blood and lymph vessels permit great swelling of this area. Edema displaces and distorts nerve endings in the dermis giving rise to itching and pain.

Important points in the clinical history of patients with vulvar lesions include:

- Character of the onset of symptoms, such as itching, edema, nodule formation, ulceration, discharge, and bleeding
- Duration of the condition
- Infectious contacts
- Menstrual function
- Diurnal variation of symptoms—external irritants are usually most noticeable during the day, while itching from diseases of internal origin is frequently more intense at night
- History of skin reactions to substances such as medications, disinfectants, soaps, ointments, nail polish, douching materials, and clothing
- Identification of the exact site of symptoms, sometimes best accomplished by having the patient digitally indicate the area.

For every patient with vulvar disease, not only is a careful pelvic examination indicated, but the lips, mouth, tongue, hairlines, breasts, and back should be examined for epithelial lesions similar to those of the genitalia. Skin lesions such as psoriasis, lichen planus, and herpetiform infections, easily recognized elsewhere on the body, may be distorted on the vulva by ulceration and secondary infection. When these dermatologic conditions involve the vulva, the most characteristic lesions will be seen on the periphery of the external genitalia or upon the thighs.

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Minimal laboratory studies for patients with ulcerative lesions of the vulva include a complete blood count; darkfield examination; serologic tests; urine examination, especially for sugar and acetone; and wet preparation for *Trichomonas vaginalis* and *Monilia*. History and character of the lesion will determine the indications for cultures, biopsies, blood chemistry studies, and complete venereal disease tests.

DIFFERENTIAL DIAGNOSTIC TESTS

Test	*Method and Purpose*
Darkfield examination	Primary and secondary syphilis diagnosis, distinguishing *Treponema pallidum* from other *Spirochaeta*
Serologic tests	Syphilis diagnosis; progress followed by changes in titer
Smear and culture	Gonococci, *Monilia*, *Mycobacterium tuberculosis*, and *Hemophilus ducreyi* differentiation
Hanging-drop culture	Trichomonads, *Monilia*, and *Oxyuris* demonstration
Ducrey bacillary skin test	Injection of 0.1 cc. of vaccine intradermally. Positive 5-mm. nodule indicates chancroidal disease sensitization.
Frei skin test	Injection of 0.1 cc. of antigen intradermally. Read in forty-eight to seventy-two hours. Positive 5-mm. nodule indicates lymphogranuloma venereum sensitization.
Tuberculin skin test	Injection of 0.1 cc. of purified protein derivative intradermally. Read in twenty-four to forty-eight hours, determines tuberculosis sensitization.
Biopsy	Preparation of fresh spread for Donovan bodies and fixed slide for microscopic study; early cancer diagnosis

Multiple infections of the vulva are so common that a systematic method of investigation is essential to an accurate diagnosis. This is particularly true for venereal diseases. With modern specific therapy, all that remains for the eradication of venereal disease is cooperation of the patient in reporting symptoms early, adequate investigation of contacts, accuracy of diagnosis, and complete treatment. Useful differential diagnostic tests for ulcerative vulvar lesions are outlined in the table.

VENEREAL INFECTIONS

Gonorrhea provides a creamy, thick, purulent cervicovaginal discharge which is irritating to the vulvar epithelium. The paraurethral ducts and Bartholin glands favor gonorrheal infection. Abscesses of these areas may result. Diagnosis is made by culture of the gonococcus.

The most simple and effective medical treatment consists of the injection of 300,000 to 600,000 units of penicillin. A paraurethral abscess usually heals readily if incised from just within the urethra out through the thin epithelium overlying the abscess.

A Bartholin gland abscess heals best when drained on the inner aspect of the labium minus. A chronic Bartholin gland cyst may be treated by excision. Bartholinectomy is not an office procedure. In young women, a functional gland may be preserved by incision and marsupialization of the duct epithelium. A

large number of Bartholin gland abscesses and cysts result from infections and trauma unrelated in any way to gonorrhea.

Chancroidal disease starts as a tiny pustule some four to ten days after inoculation. The pustule rapidly spreads into large, soft areas of ulceration with ragged and irregular edges. Induration extends beyond the region of ulceration.

The ulcer base has a dirty gray membrane which separates unevenly, leaving a granular surface that bleeds easily. The discharge has a characteristic heavy, acrid odor. Inguinal glands become swollen and develop into buboes.

Diagnosis may be confirmed by the Ducrey bacillary test and, with more difficulty, by culture of *Hemophilus ducreyi*.

Sulfadiazine is the most specific and least expensive treatment. Buboes are best aspirated. When incised, a chronic draining sinus may persist.

Syphilis of the vulva may take one of several forms: primary chancre, secondary mucous patches or condylomata lata, and the tertiary gummatous lesion. The vulva is second only to the cervix as a site for primary syphilitic infection; the labia majora represent the area most frequently involved in vulvar syphilis.

Local vulvar manifestations of syphilis are cutaneous reflections of a systemic disease. Primary lesions may take one of several forms: [1] a small, reddish-brown, painless, flat, glistening, transitory, moist abrasion, [2] an oval, well-defined, flat, superficial, excoriated type of ulcer with a moist, dark reddish-brown base, surrounded by little erythema and induration, or [3] a well-defined, punched-out ulcer with a sloping edge and a grayish-red, excavated base surrounded by induration.

Often associated with primary syphilitic ulcers of the vulva are discrete, shotty, rubbery inguinal nodes. Chancres of the vulva are frequently multiple. Occasionally the labia take on a characteristic painless, tense, dry, brawny, leathery induration very characteristic of syphilis.

Secondary syphilitic eruptions occur most frequently on the moist areas of the vulva and thigh. These are the flat-topped, wart-like cutaneous condylomas which tend to coalesce and ulcerate.

A typical gumma develops as a painless oval lump under the skin. The skin becomes thinned out, necrotic, and sloughs off, discharging the granulomatous contents of the gumma. A deep, punched-out ulcer with no initial surrounding area of inflammation remains. The ulcer becomes secondarily infected, painful, and heals with deep scarring.

Syphilis deserves primary consideration in the differential diagnosis of any ulcerative venereal lesion of the vulva. Diagnosis is made on the basis of history, darkfield examination, and serologic tests.

Penicillin is rapidly replacing arsenic and bismuth therapy. Early accurate diagnosis, isolation, and specific therapy remain the methods of preventing further spread of the disease. As far as the individual patient is concerned, regular and complete treatment prevents infectious relapses. No therapy will prevent subsequent reinfection.

Lymphogranuloma venereum is caused by a filtrable virus which produces edematous, hypertrophic, ulcerative lesions of the labia, often with associated inguinal adenitis. When lesions involve the posterior portion of the external genitalia, the large bowel may become involved, with strictures at or above the rectum.

The disease is primarily one of the dark-skinned races, but is not necessarily limited to them. Persistent external hemorrhoids, particularly in a Negro patient, may be associated with a lymphogranulomatous rectal stricture. A Frei skin test is used to confirm the diagnosis.

Treatment consists of sulfadiazine, aspiration of the buboes, and, in the healing phase, partial vulvectomy to remove disfiguring hypertrophic overgrowths of the clitoris and labia. Aureomycin and Chloromycetin have proved of limited value in this disease.

Persistent ulceration is an indication for biopsy. Cancer of the vulva may become a part of the chronic ulcerative lesion which started as lymphogranuloma venereum.

Granuloma inguinale is an ulcerative lesion involving the full thickness of the skin, usually limited to the genitalia but occasionally found in extragenital areas as well. The granulomatous ulcers have a characteristic reddish-pink, irregular surface. Diagnosis is confirmed by an unfixed fresh tissue smear (Giemsa's stain) which shows the presence of Donovan bodies.

Chloromycetin and streptomycin have largely replaced tartar emetic and Fuadin in therapy. In the healing phase of the disease, distorted hypertrophic masses involving the external genitalia may require partial vulvectomy.

NONVENEREAL INFECTIONS

Condylomata acuminata are papillary overgrowths of epithelial tissue on thin pedicles, produced by a virus infection. These lesions frequently undergo secondary infection. An odorous discharge and ulceration result. Diagnosis is confirmed by biopsy.

Small condylomas may be treated locally with 20% podophyllin in tincture of benzoin. Only the protruding portions of the condylomas are touched with the preparation. After the podophyllin has dried for about an hour, the area should be washed with soap and water. Small lesions are easily removed in this manner.

Aureomycin ointment, applied locally, is sometimes effective not only in reducing the secondary infection, but in removing the lesions. For large, neglected, confluent condylomas, therapy consists of reduction of secondary infection followed by electrofulguration or partial vulvectomy.

Trichomonas vaginalis infestations of the vagina occasionally give rise to inflammation and superficial ulceration of the vulva, particularly of the inner aspects of the labia minora. Diagnosis is made by hanging-drop examination of the typical frothy vaginal discharge and by ruling out other causes of vulvar ulceration. Treatment of *T. vaginalis* vaginitis and associated vulvitis should be directed toward improvement of the patient's general health and include the use of any one of a number of

local medications such as the sulfonamide ointments, Devegan or Floraquin vaginal tablets, or Tetronyl powder insufflettes.

Mycotic vulvovaginitis is practically always associated with some reduction in body resistance with associated ariboflavinosis. The most pathogenic offender is *Candida albicans*. The diagnosis is based on symptoms of vulvar itching and the presence of a white granular discharge covering a mucosal surface which is reddened and edematous. A hanging-drop preparation, to which 10% sodium hydroxide has been added, permits visualization of strands of mycelium. Diagnosis is confirmed by culture of mycotic organisms.

Local treatment of monilial infections consists of propionate jelly applied vaginally and to the vulva, sodium lauryl sulfate compound douches, or Tetronyl powder insufflations. Aqueous gentian violet, 2%, has no greater advantage than the above materials and has the added unpleasant features of staining and discoloration.

Tuberculosis occasionally involves the vulva. Diagnosis is confirmed by biopsy, tuberculin skin test, and culture of *Mycobacterium tuberculosis*. Treatment consists of the use of streptomycin and para-aminosalicylic acid, followed by partial vulvectomy with wide excision of involved areas.

Herpes progenitalis is a disturbing condition of the vulva because of the accompanying pain. Around the labia minora, the lesions often become confluent, ulcerative, and difficult to diagnose. Peripheral lesions show the typical small blister-like areas and patchy distribution.

Local treatment with antiseptic compresses is somewhat soothing and helps prevent secondary infection. Chloromycetin and aureomycin have not proved of definite value.

Traumatic lacerations and ulcerations readily become secondarily infected in the region of the vulva. Diagnosis of these lesions depends upon the history. Local antiseptics, with the occasional use of sulfadiazine or penicillin, bring about healing of acute traumatic abrasions.

SYSTEMIC DISEASES

Toxemia of pregnancy, especially with any added trauma to the vulva, gives rise to tremendous edema of the labia. Diagnosis is made on the basis of pregnancy complicated by weight gain, blood pressure elevation, and proteinuria. Aspiration of the fluid from the vulva facilitates delivery.

Uremia gives rise to a type of vulvar ulceration, the edges of which are surrounded by crystalline salts of urea. In addition, hyperpigmentation of the vulva results from deficiency of vitamins B and C. Diagnosis is made on the basis of physical findings and blood urea nitrogen elevation. The urinary tract obstruction should be relieved and replacement therapy given with vitamins B and C.

Diabetes mellitus causes inadequate metabolism of carbohydrates and fats. Excessive utilization of carbohydrates rapidly reduces the supply of nicotinic acid and riboflavin. Diabetic patients are often obese. Obesity, poor metabolism, urinary dribbling, edema, and itching produce circumstances favoring dermatitis of the vulva.

Treatment of vulvar infections in these patients is directed first to correction of the diabetes, plus supplemental use of vitamins, particularly of the B complex group, and reasonable cleanliness. Various local applications may be used to combat the predominating surface organism. The important principle is not to add an irritating agent which will contribute further trauma to the already partially devitalized cutaneous structures. As soon as the diabetic deficiencies are corrected, the surface epithelium will heal.

Pernicious anemia is accompanied by ulceration of the vulvar epithelium with a bronze hyperpigmentation of the adjacent skin. Diagnosis is based on history, blood count, and neurologic findings. When the deficiency of pernicious anemia is corrected, regeneration will occur in the area of tissue devitalization of the vulva.

Agranulocytosis, aplastic anemia, and acute leukemia cause peripheral vascular changes which result in deep, punched-out, oval areas of ulceration involving the vulva. The ulcers are covered by a thin grayish membrane and surrounded by very little induration or redness. Similar lesions are often seen in the oropharynx. Diagnosis is confirmed by complete blood count. Treatment is systemic rather than local.

Vitamin deficiencies often accompany alcoholism, hyperthyroidism, fever, and debilitating conditions. Ariboflavinosis favors the growth of *Candida* or *Monilia* organisms. Vulvar ulcerations from pellagra are often secondarily infected with Vincent's organisms. The use of estrogens in patients with subclinical vitamin B deficiency may cause the appearance of lesions characteristic of a lack of thiamin, nicotinic acid, or riboflavin. Metabolism of estrogens increases the demand for vitamin B.

Contact dermatitis is a type of local allergic sensitization to such things as drugs, soaps, and clothing which come in contact with the vulva. These lesions occur more often in older patients. Phenolphthalein, rectal ointments, douching materials containing phenol, perfumed soaps, poorly processed rayon, incompletely fixed dyes in undergarments, and nylon represent some of the materials to which the skin of the vulva may show localized sensitization. The diagnosis is made on the basis of history, trial, and elimination. Initial reaction to a localized allergic dermatitis is edema, fissure formation, and itching, followed by secondary trauma from scratching. After removal of the irritant, the skin of the vulva returns to normal.

Chronic atrophic dermatitis is a clinical syndrome in which the tissues of the vulva undergo a low-grade inflammatory reaction with associated atrophic and hypertrophic changes in the corium and epithelium.

Thinning of the epithelium of the labia and constriction of the introitus is designated as kraurosis. Whitish thickening of the epithelium with excessive keratinization is designated as leukoplakia. Marked hyperkeratosis, acanthosis, distortion of the basal-cell layer, dilatation of the subepithelial vascular loops, hyalinization of the dermis, round-cell infiltration, and areas of atrophy are characteristic of this type of dermatitis.

While the etiology remains somewhat obscure, it is quite probable that there are two fundamental causes of chronic atrophic dermatitis of the vulva. Neurogenic, hormonal, nutritional deficiency and allergic theories suggest a subepithelial beginning for atrophic and hypertrophic changes which characterize the condition. Histopathologic changes suggest a disturbance in the vital metabolic zone between the capillary loops in the corium and the basal cells of the epidermis.

In another group of patients, identical pathologic changes in the skin of the vulva can result from chronic external trauma. Compulsive habits of self-irritation of the vulva result in a chronic dermatitis with cornified and ulcerative epithelium similar to that seen in patients with an internal metabolic disorder. Diagnosis is made on the basis of history, observation, and biopsy.

Treatment of atrophic dermatitis is directed at measures which reduce the inflammation, alleviate pain, improve cell metabolism, and remove permanently damaged tissues. Investigation of the stomach for achlorhydria, eradication of all foci of infection, and the use of high dosage of vitamins A and B are of value. Local applications have little effect. In selected circumstances, nerve resection is recommended to relieve pain and itching. When scarring causes symptomatic constriction of the introitus or when the vulva shows areas of ulceration or leukoplakia, the involved tissues should be removed by wide excision. Roentgen therapy is contraindicated for chronic atrophic vulvitis. When the condition can be attributed to a long-standing, self-inflicted trauma of the vulva, psychiatric treatment is of greater value than any form of systemic, local, or surgical therapy.

Benign tumors of the vulva such as sebaceous cysts, fibromas, lipomas, hemangiomas, neurofibromas, lymphangiomas, ganglioneuromas, hidradenomas, and pigmented nevi should be removed by complete excision and subjected to careful pathologic investigation.

Malignant tumors of the vulva make up about 3% of all malignancies of the female genital tract. Approximately 90% of vulvar carcinomas are of the squamous-cell type. Basal-cell carcinoma, adenocarcinoma, and sarcoma represent less frequent forms of vulvar malignancy. Sarcoma is usually a tumor of early life, while squamous-cell cancer of the vulva occurs in older women.

Early symptoms include itching, burning, discharge, nodule or ulcer formation, and bleeding. Patients frequently report for examination in an advanced stage of the disease.

If malignancy of the vulva is to be controlled, all small tumors of the vulva must be removed, irrespective of the patient's age, and all ulcerative lesions which fail to respond immediately to medical treatment must be biopsied.

Following a biopsy diagnosis of carcinoma of the vulva, treatment consists of complete, deep, and wide excision of the vulva and removal of the superficial and deep inguinal glands in either a two- or one-stage operation. Radium applications and roentgen therapy are of questionable value for such patients.

COMMON CAUSES OF NONBLOODY VULVOVAGINAL DISCHARGE

Infections and like causes
- Mycosis
- Trichomoniasis
- Postmenopausal vaginitis
- Tuberculosis
- Venereal diseases
  - Gonorrhea
  - Granuloma inguinale
  - Lymphogranuloma venereum
  - Chancre
  - Syphilis, primary and secondary
- Cervicitis
- Pyometra
- Bartholin cyst
- Hidradenitis

Noninfectious causes
- Allergy and sensitization
- Injury to vagina
  - Chemical and thermal
  - Irradiation
  - Mechanical
    - Foreign body
    - Garments and pads
    - Masturbation
- Neoplasm
  - Condyloma, vulvar and vaginal
  - Polyp, cervical and uterine
  - Malignancy, cervical, uterine, vaginal, and vulvar
- Trophic disturbance
  - Leukoplakia (kraurosis)
  - Vulvitis (vitamin deficiency)
- Miscellaneous
  - Congestion (pelvic)
  - Hypersecretion
  - Uncleanliness

rapidly to the childhood pattern, going from Stage 1 of the Schroeder to Stage 2 and rapidly to Stage 3. Stage 2 shows a moderate reduction in Döderlein's bacilli (acidophils), with mixed cocci and coliform bacilli in considerable numbers. Stage 3 lacks Döderlein's bacilli. The cellular content consists mostly of leukocytes.

With the approach of adolescence and onset of puberty, estrogens again exert an influence by characteristic changes in the vaginal mucosa and the proper development of the cervix. Again a change occurs in the bacterial flora, reverting in normal circumstances to Schroeder Stage 1.

The cellular content within the first few weeks of life is essentially epithelial but, after the estrogens have been dissipated, it becomes essentially one of white cells. From adolescence through the menacmic phase of life the normal healthy vagina will again contain essentially epithelial cells. These cells change slightly through the menstrual cycle, but each particular phase will be repeated in subsequent cycles.

The only major change is that associated with menstruation and that following delivery. For many days after delivery a great change is associated with the lochia. A sudden, phenomenal change in bacterial flora occurs at this time and continues a few weeks. The change with menstruation is similar but lasts only a few days. After the menopause there is a normal, but incomplete, physiologic return to the childhood pattern.

Whenever a patient has vulvar or perineal itching or discharge, one must consider, in addition to all listed causes, the dermatologic diseases which may involve the mons veneris, the skin lateral to the hairline of the labium majus, and the perianal area. Because of the particular nerve supply of the vagina, the symptoms from this site are limit-

ed and are more often vulvar in nature. Urethral lesions (caruncle, polyps, and mucosa prolapse) may produce tenderness, soreness, hyperesthesia, and irritation. Symptoms of cystitis may produce lower abdominal and pelvic distress along with the more typical urinary symptoms of frequency and tenesmus.

One should always obtain a careful history of the nature of the symptoms, the duration, and the conditions which seem to aggravate or relieve the condition.

It should be emphasized that moisture of the vagina and vulva is not only normal but essential and may be compared to the moisture in the conjunctival sac. Some individuals are unaware of this moisture until their attention is focused upon it by some particular episode or disease. After eradication of the infection, the patient may worry unnecessarily about the normal moisture until she has been reassured. The usual hygiene and bath are sufficient to take care of this slight moisture.

To obtain the best possible observation and examination, the patient should not douche for a period of three or four days before seeing the doctor and should eliminate all local medications. The more common causes of discharge fall into a few general categories:

MYCOSIS

Vaginal mycosis is caused by a fungus known as *Monilia* (usually *albicans*) but also called *Candida (albicans)*. Use of the term *Candida* is encouraged by botanists since they have a species known as *monilia*, but totally different and unrelated to the medical *Monilia*, which is not a yeast. Yeasts are nonpathogenic, may be ingested safely, and do not cause vaginitis or vulvitis. When injected under the skin and into the tissue of the body, yeasts do not cause trouble.

The medical *Monilia* is frequently found in the gastrointestinal tract of healthy men and women, on the skin, and even in food products. The adult human vagina is a common source of these fungi. These organisms are found in some 14 to 40% of all pregnant patients, depending somewhat upon the economic and hygienic status. Hence, the presence alone of these fungi is of no consequence because the vaginal bacterial flora comes from the perineal and bowel sites or is introduced from some other source.

Dominance of the bacteria is related directly to the type of vaginal epithelium and the amount of cervical secretion and menstrual and lochial discharge. These fungi produce symptoms only when sufficient carbohydrate material is present in the vagina—nearly always in pregnancy or after estrogenic therapy in the menopause. The diabetic woman may have vulvar mycosis, especially when the diabetic condition is uncontrolled. Thus *C. albicans* is of importance only when it produces pruritus, one invariable and usually major complaint. The untreated patient's symptoms disappear almost immediately within two days after delivery.

C. albicans produces either caseous-like material in the vagina or thrush spots on the vaginal walls. The pruritus probably results from an acetaldehyde, a metabolic by-product.

At one time mycotic vulvitis in diabetic women was classed as a result of glucose or ketone irritation. Glucose will not produce symptoms in the vagina or vulva unless these fungi are present.

Mycotic vulvitis produces an acute redness and hyperemia with, not uncommonly, a slight bluish tint. The numerous breaks on the labia are the result of scratching. If the condition becomes more protracted, the reaction spreads beyond the hairline.

Diabetic patients with high renal thresholds may not have typical results from urinary tests. Thus, a glucose tolerance test may be necessary to exclude or include the diagnosis when vulvitis is associated with pruritus and the typical appearance of mycosis.

Therapy—An aqueous or a glycerine vehicle containing 1% gentian violet has long been a reliable therapy. An occasional individual becomes sensitive to gentian violet and has severe chemical vaginitis and vulvitis. Dilute Lugol's solution can be used in place of the gentian violet.

For nearly two years we have been using, with excellent results, a preparation in a tragacanth acacia-jel containing 3% ricinolcic acid and 0.5% oxyquinoline (Aci-Jel). Of a number of compounds and preparations which have been tested in our laboratory, the more promising of which were given clinical trial, not one has approached the uniformly and consistently good results of this preparation. It does not cause stain, irritation, or other undesirable features. The medication is placed in the vagina each evening.

Carter and his colleagues report excellent results with Propion Gel.

Special anal hygiene should be employed to avoid the introduction of these fungi from the bowel.

Most of the common sugars such as glucose will aggravate the mycosis. Lactose is one exception.

The patient can be relieved of her symptoms and cured in most instances without difficulty. It is important to treat the pregnant patient so that the baby will not acquire oral thrush from contamination during delivery or shortly afterward. The diabetic should have the diabetic state controlled and local process treated simultaneously.

TRICHOMONIASIS

Vaginal trichomoniasis is one of the two most common causes of discharge; excessive cervical secretion is the other.

The discharge with trichomoniasis is characteristically yellow, bubbly, or foamy, has a putrid odor, and may be associated with a mild vulvar irritation and sometimes introital pruritus. The perineum may also have some irritation. The trichomonads, which are found on microscopic examination of a hanging-drop or moist preparation, are slightly larger than white cells and somewhat elongated. Their movement distinguishes them further from epithelial fragments and leukocytes. The diagnosis is established beyond doubt with observation of the active anterior flagella, 4 anteriorly and 1 posteriorly.

The vagina is stippled or spotted in very acute situations, especially in the upper vagina or around the cervix. The latter not uncommonly has a rather thin, watery type of

discharge, not unlike that of acute rhinitis.

Trichomoniasis is seldom a problem before adolescence and is not often seen in persons who have pronounced relaxation with rectocele, cystocele, or prolapse of the uterus. It is more acute with a small or tight introitus and occurs moderately often during the postmenopausal state.

Therapy—The vaginal involvement can be treated with plain lactose tablets or beta lactose in No. 12 veterinary capsules. These capsules should be inserted into the vagina each evening. Some watery secretion results from hydroscopic action of the lactation. Lactose enhances the reestablishment of a normal vaginal flora. Although lactose is not fermented by *C. albicans*, an occasional patient may develop mycosis. This occurs because the vaginal mucosa builds up enough carbohydrate to be a fertile field for the fungi as the trichomoniasis is cleared.

The postmenopausal patient who has trichomoniasis should be treated with stilbestrol, 0.5 mg. orally daily, for three to four weeks. The medication is then reduced in an equal period of time. Douches should be avoided with trichomoniasis except for perhaps a weekly douche of 1 qt. of plain water or one containing 1 tsp. of powdered celum or 2 tbs. of table salt to prevent an excessive accumulation of lactose in the vagina.

The trichomoniasis will require treatment for three or more weeks, depending upon the extent of inflammation. In severe or chronic cases, there may be inflammatory or small abscesses under the vaginal mucosa. This state accounts for the need for protracted therapy until healing is complete. Otherwise, recurrence is likely.

Other focal sites contribute to recurrences—cervicitis, erosion or eversion, as well as excessive secretion from a low-grade inflammation of the cervix, pelvic infection, or excessive response to sexual excitation. A chemical cautery, such as silver nitrate, in either 20% solution or the form of lunar caustic stick, should be used initially. Increased discharge will follow and perhaps some bleeding, but the hazard of pelvic cellulitis will be greatly reduced. After one or two such treatments electric cautery may be used. Since deep cutting risks cervical stenosis, dessication of the erosion and cervical canal produces desirable results.

Sometimes repetition is necessary after one to two months. If the vaginal condition fails to clear or recurs, a thorough urethroscopic and cystoscopic examination may be advisable. Urinalysis will not reveal some of the lesions in the urethra and bladder. One need not find trichomoniasis to find a contributing source. Any urologic lesions should be treated appropriately.

POSTMENOPAUSAL VAGINITIS

Postmenopausal vaginitis is moderately common and is recognized by the typical vaginitis superimposed upon an atrophied vaginal mucosa. Stilbestrol daily in 0.5-mg. amounts will give quick relief. After three to four weeks, the dosage may be gradually reduced over three to four weeks. When the condition is a nonspecific vaginitis or trichomoniasis, estrogen

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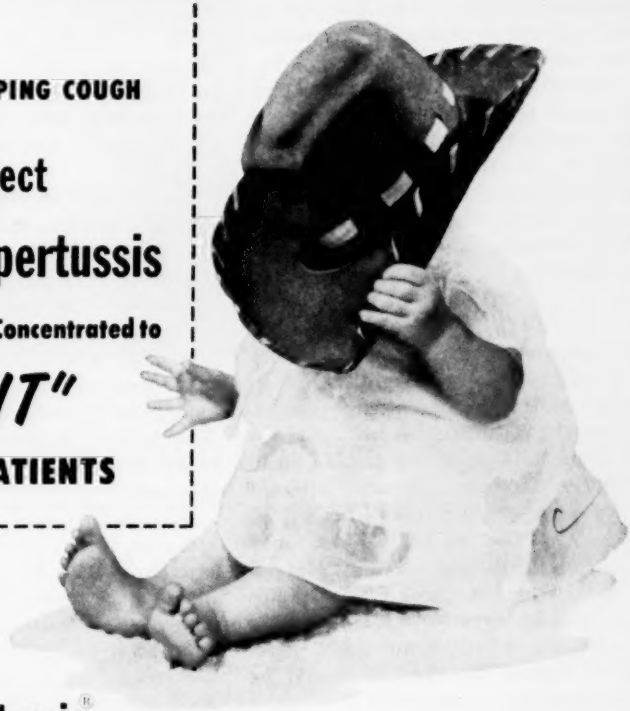

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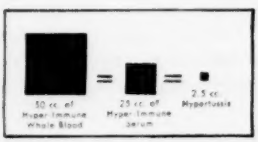

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Douches should be avoided except as stated above because they remove the evidence and do not get at the base of the trouble. Alkalis should at no time be used, because hyperacidity of the vagina does not exist. Acid douches affect the *p*H only temporarily.

CHILDHOOD INFECTION

Vulvovaginitis in the child is similar to postmenopausal vaginitis in its physiologic and pathologic pattern. Gonorrheal infection is not nearly as common now as in the past. A child is very prone to become infected very early if others about her are so infected. The child likewise may have urethritis and cervicitis.

Gonorrheal vulvovaginitis responds remarkably to the stimulation of 0.2 to 0.3 mg. of stilbestrol daily. After three weeks, the therapy should be discontinued or reduced. The child may complain of mammary tenderness. A mucoid discharge from the vagina may be present, coming from the cervical glands as a result of the estrogenic stimulation. Penicillin is the drug of choice for such infections.

PERIURETHRITIS

Periurethritis causes discomfort about the urethra and the introitus but little or no discharge. Sometimes local chemical cauterization, even though followed by considerable pain, will yield good results. In the postmenopausal patient, estrogen therapy is a helpful adjunct.

ATROPHIC VULVITIS

Vitamin deficiency is not a primary cause of vaginal discharge but may be associated with conditions similar to, or identical with atrophic vulvitis or kraurosis. The one symptom is the profound and unrelenting itching.

The clinical or the pathologic picture of atrophic vulvitis varies with the stage. The first stage is one of edema or swelling. Agglutination of intralabial folds along with intensification of pruritus appears in the second stage. The third stage marks the beginning of atrophy and the development of leukoplakia-like lesions. The fourth or final stage involves complete atrophy or parchment-like structure.

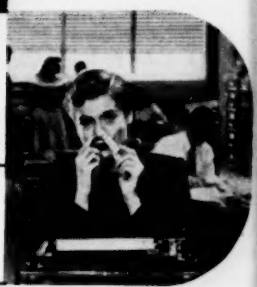
The usually accepted therapy for atrophic vulvitis has been local vulvectomy. A number of other treatments have been explored, for instance, the use of radium, roentgen rays, soothing as well as escharotic ointments, local nerve block, and local anesthetic infiltration.

A large percentage of patients with atrophic vulvitis in the first two stages have had symptomatic and clinical cures by sufficient amounts of B complex, C, and A vitamins. A goodly number in the third and fourth stages have been greatly relieved by these vitamins but one cannot expect the extreme tissue change of atrophy to vanish. The vitamins found to be effective are thiamin, riboflavin, niacinamide, ascorbic acid, and A.

Vitamin deficiency can be explained by several possibilities: It may be due to lack of adequate intake or, more commonly, to conditions in

when nasal congestion

is most distressing...



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the gastrointestinal tract, such as diarrheal states or bowel dysfunction or impairment, which prevent adequate absorption of the vitamins. A third cause of deficiency may be hepatic disease with inability of the liver to store or mobilize the vitamins as needed. A fourth cause can be local vessel changes which result in local deficiency.

The dosage should be approximately 20 mg. of thiamin, 10 mg. of riboflavin, 150 mg. of niacinamide, an equal amount of ascorbic acid, and between 10,000 to 25,000 units of vitamin A daily. Inasmuch as vitamins A and C have sometimes given good results alone and since a combination of three of the B complex listed has been beneficial, it is recommended that all be used together. If the lesion does not subside, the diseased area should be removed because of the great danger of development of malignancy in this site. Simple vulvectomy may occasionally be followed by a recurrence.

FOREIGN BODIES

Foreign bodies in the vagina are likely to produce discharge. The discharge will be much like that found in trichomoniasis. The treatment consists of removal of the foreign body.

For the postmenopausal patient a saline douche daily and stilbestrol for three weeks is adequate. For the woman in the reproductive period, saline or alum douches daily will usually suffice in two or three weeks. Every child with vulvovaginal discharge should have a vaginoscopic examination, using a urethroscope if necessary, to exclude a foreign body. Stilbestrol, 0.2 to 0.3 mg. daily for three weeks, is desirable for the child after removal of the foreign body.

CHEMICAL CAUSES

Chemical irritations are very likely to appear either because the patient used an improper amount or is sensitive to a particular preparation. Even materials like gentian violet or picric acid are occasionally associated with sensitization. Bichloride of mercury and lysol are both capable of producing a chemical irritation.

CERVICITIS

The cervix is found commonly to have a local inflammation in the lumen of the canal, which causes it to produce a thin, watery, clear secretion, or a more extensive inflammation which involves the external portion of cervix, especially in the state called erosion and eversion. Endocervicitis alone may have to be differentiated from excess cervical secretion as the result of an excessive amount of estrogens. Pelvic congestion, disease of the corpus, and excessive sexual excitation are other contributing factors of inordinate cervical discharge.

Inflammation of the cervix and like lesions should first be treated with chemical cautery such as silver nitrate, copper sulfate, phenol, Negatan, or other agents. The vaginal mucosa should be protected from caustic materials. After two or three treatments at two- or three-week intervals one may resort to mild electric cauterization of the cervical lumen and eroded area shortly after the completion of a period. Certain cervical lesions, on the other hand, can be treated by hyperthermia, "thermoflo" or Elliott's treatment.

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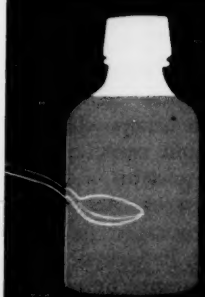

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Control of Thromboembolism with Dicumarol

BENJAMIN E. URDAN, M.D.,* AND MARVIN WAGNER, M.D.†
Marquette University and Mount Sinai Hospital, Milwaukee

Prepared for Modern Medicine

SINCE the realization of the hazard of thromboembolism, innumerable methods have been employed to prevent this dangerous complication of surgery. DeTakats[1] records that 50 to 60% of adults carry thrombi in the plantar veins or the calf veins of the muscles in the lower leg. Rossle[2] points out that 27% of all persons over 20 harbor such thrombi in the leg muscles. Consequently, if an intrinsic factor of preformed clots exists in the legs, one can readily appreciate the danger that accompanies the patient to the operating room.

In view of the possible risk and because of our inability to recognize the potential thrombotic tendency before intravascular thrombosis becomes evident, prophylactic measures against thromboembolism are imperative.

Therapeutic measures, such as thyroid extract, prevention of infection, combating anemia, leg exercises, and, recently, early ambulation, have been advocated to reduce the incidence of intravascular clotting. However, no therapeutic measure has fulfilled our hopes as have the anticoagulants.

McCann[3] made a four-year study of the control of postoperative thromboembolism. He found that the incidence of thrombosis was a fairly constant figure of about 2.5% in a group of patients who had ten days of bed rest, in a second group who were ambulated on the first to the third day, and in another group ambulated on the third to the seventh day. With these three groups, the following supplemental regime was also employed:

Because of Frykholm's postulate that pressure of the calves on the bed causes trauma to the leg veins with subsequent thrombosis, no pressure was allowed on the calf muscles from the time the patient was placed on the operating table until after the first week of ambulation. Also, paralleling the demonstration by Potts and Smith that a 250% increase in blood flow in the extremities of animals occurs when the legs are elevated and exercised, the extremities of the patients were elevated for the first week. Active foot exercises were encouraged as advocated by Allen and, in view of Walter's contention, patients were given epinephrine in oil, unless contraindicated, in order to stimulate the circulation.

Many writers contend that early

* Associate Clinical Professor of Obstetrics and Gynecology, Marquette University, Milwaukee; Chairman of the Department of Obstetrics and Gynecology, Mount Sinai Hospital, Milwaukee.
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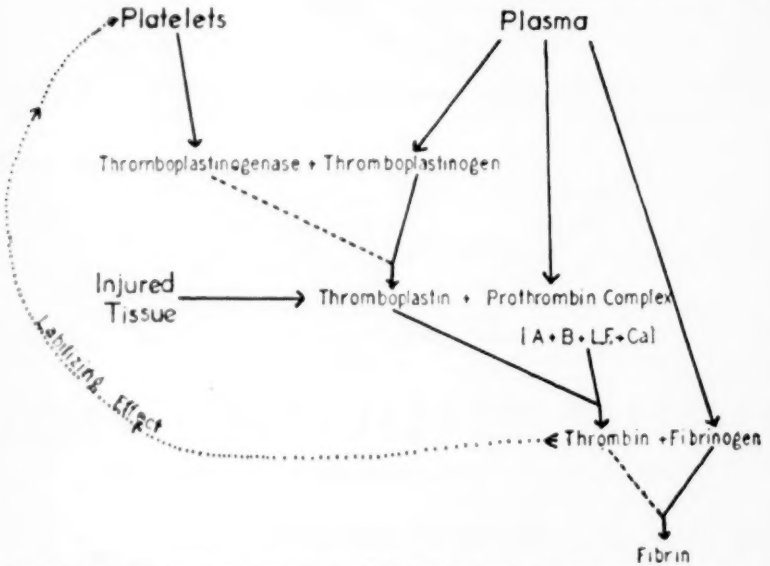
ambulation is sufficient to prevent thrombotic complications. However, McCann showed that, of a total of 13 thrombotic complications encountered despite the use of early ambulation, 8 occurred after ambulation on the first postoperative day, 3 were encountered after ambulation on the second postoperative day, and 2 were noted after ambulation on the third postoperative day. One of these patients died of a massive embolus on the fifth postoperative day. The preponderant incidence of the lesion was among the patients over 50.

McCann demonstrated that, despite all this precautionary and auxiliary treatment, the rate of incidence of the lesion was not modified unless dicumarol prophylaxis was adopted. When dicumarol was administered prophylactically to all patients and no ambulation permitted on the first to the third day, the rate of thromboembolism dropped sharply to 1.5% and no deaths occurred from embolism.

An important factor in control of thromboembolism is an understanding of the physiology and pathology that lead to the formation and propagation of a thrombus within a vein. For this, we turn to the comprehensive and revealing work of Quick.[2] As we note in the figure, showing the coagulation mechanism, a chain reaction is brought about by the labilizing effect of thrombin on the platelets.



Coagulation mechanism. Broken lines indicate catalytic or enzymatic action.

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bin, because of its action on platelets, has the power to set off a chain reaction that potentially could coagulate all the fibrinogen and convert all the circulating blood into a solid clot. However, because of the enormous surface of the fibrin reticulum in the clot, the thrombin is promptly removed by absorption, with consequent interruption of the chain reaction.

Quick[2] sets forth the following sequence in the formation of a thrombus: [1] a localized area of injury of vessel wall with adherence of platelets, [2] agglutination and disintegration of platelets with formation of thrombin and a reticulum of fibrin enmeshing intact platelets, [3] retraction of the primary clot, causing a serum to be exuded, which is rich in nascent thrombin, [4] formation of a new clot built upon the original thrombus, [5] growth of the thrombus by successive layers of coagulum which, on retraction, furnishes the thrombin for subsequent clots.

Consequently it can be seen that, if the circulation is rapid, the serum is promptly washed away and the thrombus fails to propagate. When the circulation is sluggish, the exuded serum causes the clotting of blood about the thrombus and a new clot is built on the old thrombus. It, in turn, retracts and fresh serum brings about an additional extension of the thrombus.

Because of the flow of the blood, the growth of the clot is principally at the tip and in the direction of the stream. Not only does the retraction explain why the thrombus propagates itself, but it clearly accounts for the common observation that the clot may be entirely unattached to the walls of the vessel except at the locus of origin. Such a clot may be designated as of the phlebothrombotic type.

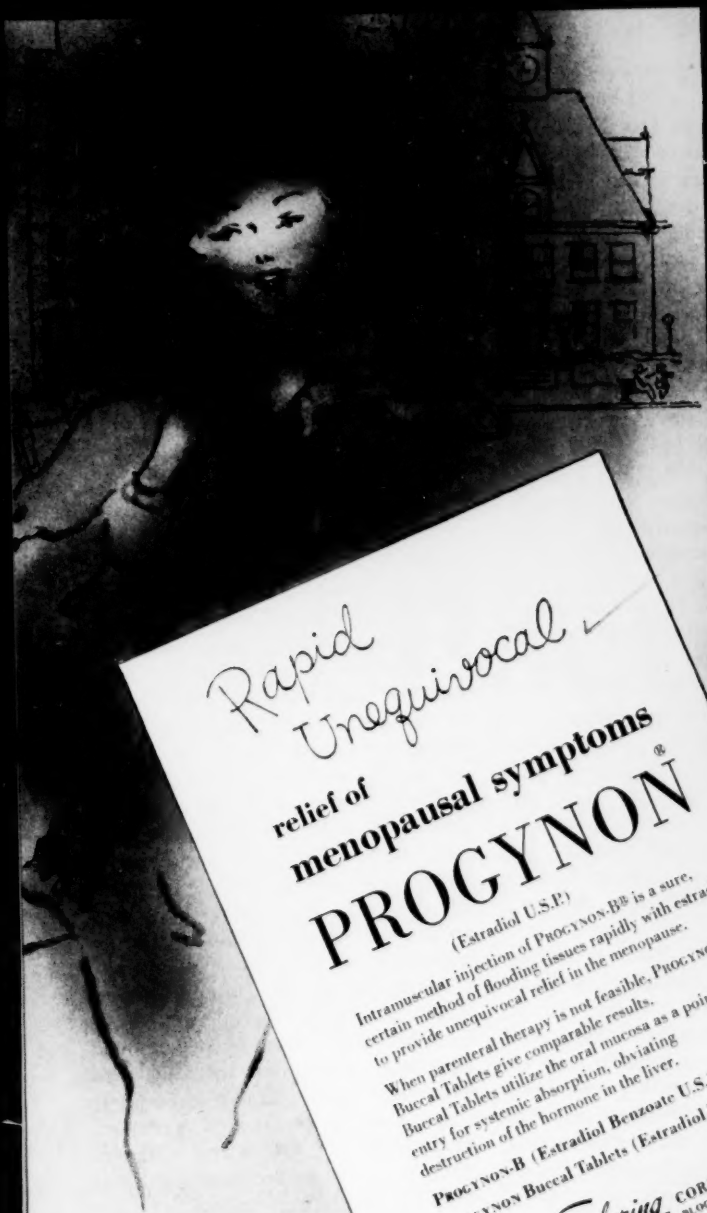
Our last consideration is the significance of clot retraction. It has been shown that clot retraction is influenced first by the number of circulating platelets and second by the speed and quantity of thrombin production. Also, clot retraction is faster and more pronounced in anemic blood.

Consequently, as Quick[2] states:

> It becomes apparent that a logical approach to the prevention of venous thrombosis is either to reduce the clot retractility of the blood, or else regulate the production of thrombin. The former cannot be accomplished as yet, for little is known about influencing the platelet count. For the latter approach, we have several therapeutic agents: heparin, dicumarol, and Tromexan.
>
> Heparin acts as an antiprothrombin as well as an antithrombin. Dicumarol reduces the production of thrombin by lowering the prothrombin level of the blood, for any reduction of thrombin formation lowers clot retractility and, therefore, the thrombotic tendency. It follows that even a slight depression of the prothrombin level should be beneficial.

Tromexan acts in the same manner as dicumarol.

We practice so-called early ambulation routinely, but we are not satisfied that it is actually accomplished. All gynecologists know that true ambulation is almost impossible. The age and general condition of the patient are frequently such that she cannot walk around her room, beginning on the first postoperative day, as of-



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ten as necessary to gain the benefits of real ambulation. Dangling the legs over the sides of the bed or sitting in a chair does not allow free circulation in the legs with the femoral and popliteal areas at right angles. The shortage of hospital personnel precludes the possibility of all patients having aid and supervision in attempting to walk in the immediate postoperative period.

Consequently, we have attempted to circumvent the hazard of intravascular clotting by employing routine anticoagulant therapy postoperatively. We use dicumarol, or 3,3'methylenebis (4-hydroxycoumarin), as our anticoagulant agent. As stated, the pharmacologic effect of this drug is to lengthen the prothrombin clotting time by decreasing the prothrombin level of the blood. Since employment of dicumarol is so dependent upon the prothrombin time, it is of the utmost importance that a test be employed for determination of prothrombin activity that is efficacious but still not too burdensome. We have employed the "simple bedside test" of Ziffren, Owens, Hoffman, and Smith.

Patients vary in their sensitivity to dicumarol for its effect depends to some extent on the rate of absorption, the state of nutrition, and the body weight. The safe and effective degree of prothrombin deficiency produced by dicumarol lies in a comparatively narrow zone, that is, when the concentration of prothrombin in the blood is between 10 and 30% of normal. Allen, Barker, and Hines[3] have recorded, in their experience with a large number of surgical cases, that thrombosis in human beings is almost surely inhibited if the level of prothrombin in the plasma is less than 30% of normal. Serious bleeding almost certainly will not occur if the level of prothrombin is greater than 10% of normal. The prerequisites for adequate dicumarol therapy are a reliable and experienced laboratory, daily prothrombin time determinations, and individualization of each patient.

We have made a clinical survey of 750 consecutive major gynecologic postoperative patients, all of whom were administered dicumarol routinely as a means of preventing any untoward complications from intravascular clotting. These patients were operated on by the senior author.

Dicumarol is administered in the form of tablets, each containing 50 or 100 mg. of the drug. The entire twenty-four-hour dose is administered orally at about the same time daily. Our plan of dosage is dependent upon what we term the "control prothrombin time," which is the value ascertained on the morning of the first postoperative day. All subsequent prothrombin times are taken at about the same hour daily.

Many physicians contend that, to have maximum therapeutic effects from dicumarol and sufficient postoperative depression of the prothrombin level, the anticoagulant therapy must be started preoperatively. However, Quick and Stefanini[4] have recently shown that prothrombin in circulating human blood is present partly in a free or active state and partly in a precursor or inactive state. Only the active prothrombin appears to participate di-

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rectly in the clotting of blood. Interestingly, their studies show that the free prothrombin drops immediately after the administration of dicumarol. And, as was borne out in a previous report,[4] our mode of administration of dicumarol precludes preoperative administration and confirms the immediate effect as described by Quick.[3] We have shown that the initial prothrombin time in different individuals is quite variable (see Table 1).

TABLE 1. INITIAL CONTROL PROTHROMBIN TIME VARIATION IN PATIENTS

Per cent of normal	*No. of patients*
100	189
90 to 99	42
80 to 89	87
60 to 79	111
50 to 59	21

If the patient's initial value is 100% of normal, we begin with a first dose of 300 mg. of dicumarol. If this value is between 60 and 80% of normal, our first dose is 150 to 200 mg. of the medication. Finally, if the value is below 60% of normal, we proceed with caution and administer 100 mg. or less of the drug initially.

A patient's prothrombin time usually rises after surgery. This bears out the importance of employing the initial control prothrombin time as an index of dicumarol therapy. For, as we have observed in a series of 25 consecutive unselected cases,[4] the prothrombin time before surgery in most cases varied to such an extent postoperatively that initially large doses of dicumarol could have been dangerous (see Table 2).

Individualization is a very essential factor in dicumarol therapy. We have had patients who showed marked sensitivity to the drug, whose concentration of prothrombin in the blood fell abruptly to less than the critical level with just the initial dose of the drug. Two cases are compared in Table 3. One patient had marked sensitivity to the drug, experiencing a profound rise in the prothrombin time after receiving only 200 mg. of dicumarol; the other patient seemed refractory to the medication, receiving 1,700 mg. over a period of fifteen days and only attaining a prothrombin time of 50% of normal.

TABLE 2. VARIATION OF PROTHROMBIN TIMES PRE- AND POSTOPERATIVELY

*Preoperative prothrombin time**	*Postoperative prothrombin time*						
	No change	95-91	90-85	84-79	78-72	71-68	67 and below
100	1	3	1	6	4	2	1
90-80			1		1	2	2 {64, 60}
79-70							1 (61)

* Expressed as per cent of normal.

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1. Bull. Rheum. Dis. 1:9, 1951.
2. Am. J. M. Sci. 222:243, 1951.

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Wellman and Allen[5] of the Mayo Clinic recently substantiated our findings, demonstrating the variation in the responses of different persons to the same amounts of dicumarol. We cannot emphasize strongly enough that there is no "fixed dosage" of dicumarol but that the employment of this anticoagulant must be based upon daily prothrombin times.

We maintain the prothrombin deficiency in our patients between 30 and 40% of normal until they have become totally ambulatory for three days. The patient is not kept in bed longer than if she were not on dicumarol therapy, but walks about as much and as early as she will and can endure. Before dismissal of the patient, a check of the prothrombin time is taken to be sure that a rise to normal is taking place.

The only hazard accompanying the use of dicumarol is the possibility of hemorrhage. In this series of 750 cases, we encountered 9 cases of bleeding which we attributed to overdosage with dicumarol. However, by the employment of 72 mg. of menadione sodium bisulfite (Hykinone) intravenously and 30 mg. of Synkavite intramuscularly, three times at four-hour intervals, bleeding was stopped and the prothrombin time was out of the critical level within twenty-four hours. In fact, on several occasions, we found a response within four hours.

It is worth while to interject here that both vitamins K_1 and K_2 oxide are more effective as antagonists to dicumarol toxicity than are the water-soluble vitamin K preparations.[6]

TABLE 3. COMPARISON OF DICUMAROL SENSITIVITY IN 2 PATIENTS

Sensitive Patient															
Postoperative day	1				3		5				8				
Prothrombin time (% of normal)	100				20		40				Dismissed				
Dicumarol dosage (mg.)	200														
Resistant Patient															
Postoperative day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Prothrombin time (% of normal)	100	77	65	50	48	60		81	86		81	65	60	50	60
Dicumarol dosage (mg.)	300	100	100	100	50	100	100	200	200	100	100	100	100	50	
					Positive Homans' sign		Tender calf					No tenderness or Homans' sign		Out of bed	Home

If, however, an excessive hypoprothrombinemia should occur without a satisfactory response to synthetic vitamin K, Cosgriff and his associates recommend the use of lyophilized plasma.

Whole blood transfusions also have been used with adequate effect; however, in our series, we have had no occasion to use plasma or whole blood and have never had a serious hemorrhage.

Certain definite contraindications to dicumarol therapy exist. The absolute are: hemorrhagic disease, significant liver disease, moderate to severe renal disease, subacute bacterial endocarditis, and conditions requiring tube drainage. The relative

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1. Bain, W. A., Broadbent, J. L., and Warin, R. P.: Lancet 2:47, 1949.

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contraindications are: dietary deficiency states, especially that of vitamin K, fever, salicylate or sulfonamide therapy, and operations on the brain and spinal cord.

Among the 750 patients subjected to major gynecologic surgery who received routine dicumarol therapy postoperatively, 1 case of phlebothrombosis in a dicumarol-resistant patient was encountered and 9 cases of hypoprothrombinemia.

It is our belief that routine dicumarol prophylaxis against intravascular clotting and its dreaded complications is both safe and advisable. While the incidence of death from pulmonary embolism in reported series of operative results from well-regulated gynecologic services is extremely low, we feel that these mortalities are avoidable, as are the nonlethal complications of intravascular thrombosis.

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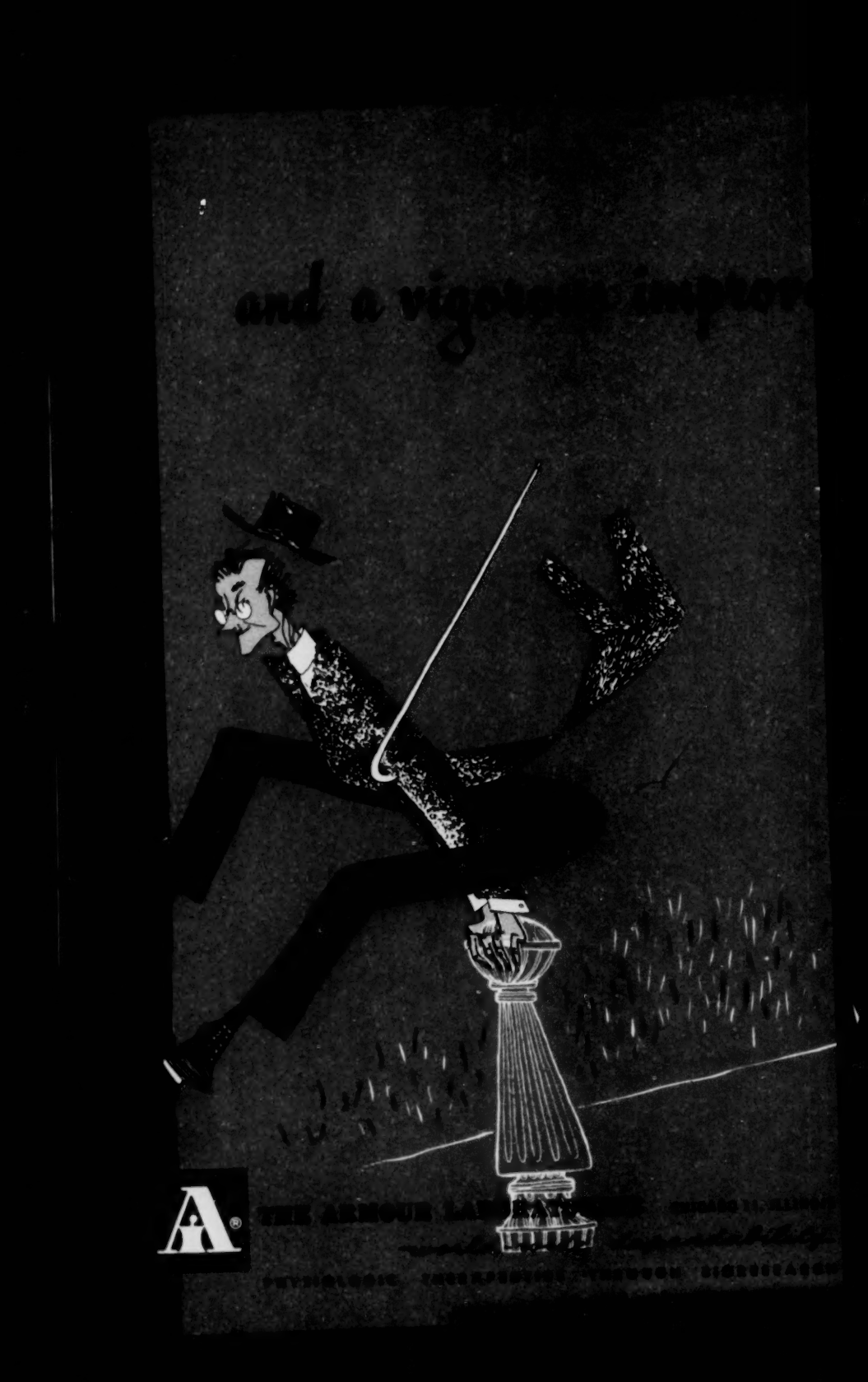
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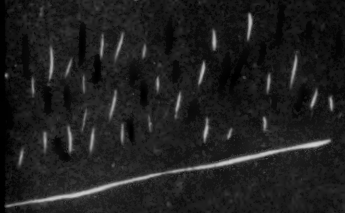

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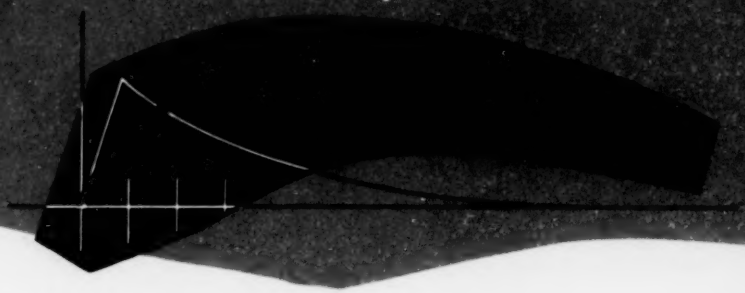

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Medical Forum

Discussion of articles published in MODERN MEDICINE *is always welcome. Address all communications to The Editors of* MODERN MEDICINE, *84 South 10th St., Minneapolis 3, Minn.*

Sphincterotomy in Pancreatitis*

Comment invited from
Hans L. Popper, M.D.
J. G. Probstein, M.D.
Donald C. Haugh, M.D.
Hugh G. Trout, Jr., M.D.

► TO THE EDITORS: A common channel formation between the common bile duct and the pancreatic duct, as can be proved by demonstration of pancreatic enzymes in the biliary tract, seems to be the predisposing factor for development of acute pancreatitis in about 9 of 10 cases (*Arch. f. klin. Chir.* 175:660, 1933).

Sphincterotomy, as Drs. Henry Doubilet and John H. Mulholland advise, appears, therefore, to be the most rational approach to the prevention of recurrent attacks of acute pancreatitis. It can be performed through the common duct with Colp and Doubilet's instrument or by transduodenal choledochotomy.

Inasmuch as the use of antibiotics has made duodenotomy a harmless procedure, the transduodenal approach is preferable to blind transcholedochal manipulation. By performing the entire procedure on a clearly exposed structure, sphincter dissection can be better controlled and hemostasis better assured.

HANS L. POPPER, M.D.

Chicago

*MODERN MEDICINE, Aug. 15, 1951, p. 73.

► TO THE EDITORS: We believe that the indications for sectioning the sphincter of Oddi in the treatment of pancreatitis have not been clearly stated, nor has the therapeutic value of the procedure been amply proved. Much of the enthusiasm for the procedure is unjustifiable in view of the natural history of the disease.

While acute transient attacks of pancreatitis recur in 25 to 50% of cases, two or even more times, the attacks soon cease. We have followed patients for as long as nineteen years and, among nearly 200 patients who have had transient acute pancreatitis, we have never seen one with calculi, obstructive jaundice, or steatorrhea, that is, clinically manifest chronic pancreatitis.

Since we have no way of determining which patient will have another attack of pancreatitis, we have no way of knowing in which cases the sphincter should be sectioned. Since even recurrences of pancreatitis tend to cease spontaneously, the fact that a few patients have not had pancreatitis after their sphincters were sectioned does not justify the operation.

On the contrary, section of the sphincteric mechanism, particularly if it is not a graded section, may lead to ascending biliary infection, as we have demonstrated experimentally. We have also seen a patient who

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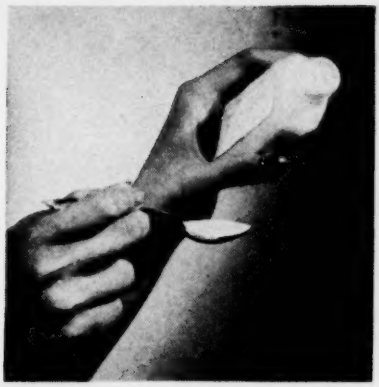

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Sulfadiazine	0.167 Gm.
Sulfamerazine	0.167 Gm.
Sulfamethazine . . .	0.167 Gm.
Sodium citrate	0.500 Gm.

Sugar and flavoring agents, q.s.

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Pot. Penicillin G	1,800,000 units
Sulfatryl Wampole	42 Gm. (1 bottle)
Aqua dist.	60 cc.

M. ft. susp.
Sig.: As directed

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had a section of the sphincter of Oddi after two episodes of acute pancreatitis and subsequently had a pseudocyst of the pancreas, presumably the result of a third attack of pancreatitis, which occurred despite the sphincter section.

This is the opinion of the group engaged in research on pancreatitis at the Jewish Hospital of St. Louis. This group includes Drs. Morton A. Pareira, Leo A. Sachar, Carl J. Heifetz, and myself.

J. G. PROBSTEIN, M.D.
St. Louis

► TO THE EDITORS: I have not used sphincterotomy in pancreatitis as advocated by Drs. Doubilet and Mulholland, but any operation that shows promise of preventing a recurrence of this dangerous disease is worthy of consideration.

The rationale of the operation appears sound. Most investigators in this field believe that spasm of the sphincter of Oddi is responsible for acute pancreatitis in many cases. However, they differ on whether it results from reflux of bile into the pancreatic duct or merely from the damming back of pancreatic secretion within its own duct so that the finer branches are ruptured and autodigestion of the gland occurs.

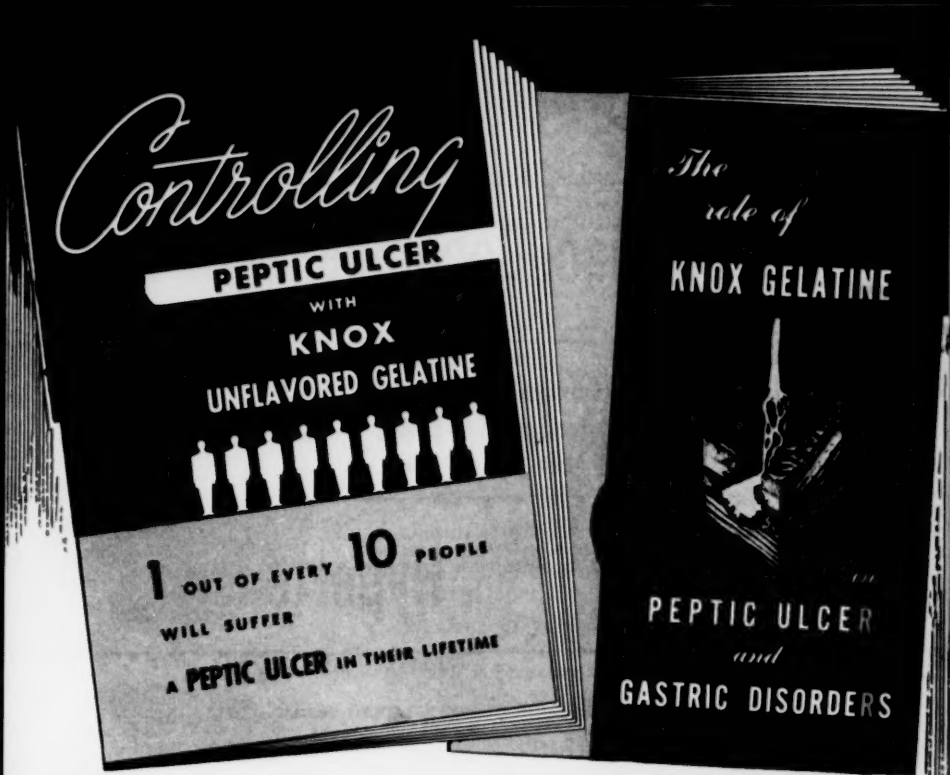
Lium and Maddock, Hess, Wangensteen, and others believe that pancreatitis may be produced by the obstruction of the flow of pancreatic juice when the latter is rich in enzymes as after a heavy meal. They have produced this disease experimentally by ligating the pancreatic duct after an animal has eaten a heavy meal or has been injected with a drug, such as pilocarpine, which will cause a flow of pancreatic juice rich in enzymes. If this latter theory of etiology is correct, a common channel between the common bile duct and the pancreatic duct would not be necessary. This would explain the development of pancreatitis in those instances in which no common channel can be demonstrated between the choledochus and pancreatic duct.

In either event, section of the sphincter of Oddi should prevent recurrence of the attacks, since in both theories, spasm of the sphincter is held to be the most common cause of the obstruction. This operation, if it continues to give long-term results as favorable as those obtained by Doubilet and Mulholland, will offer a simple, positive approach to the treatment of a disease for which there has been, in the past, very little definitive therapy.

DONALD C. HAUGH, M.D.
Mayfield, Ky.

► TO THE EDITORS: The treatment of pancreatitis in the acute stage is primarily supportive. In the chronic stage, the treatment should depend on the etiologic factor, if this can be determined. In many cases one is unable to determine the cause while, in others, fairly definite proof can be demonstrated at operation.

In some cases, the ampulla of Vater is obstructed by biliary calculus, as was first brought out by Opie in 1901. The gallbladder is diseased and, frequently, there are more stones in the common bile duct. The treatment of choice is removal of the stone from the ampulla as well



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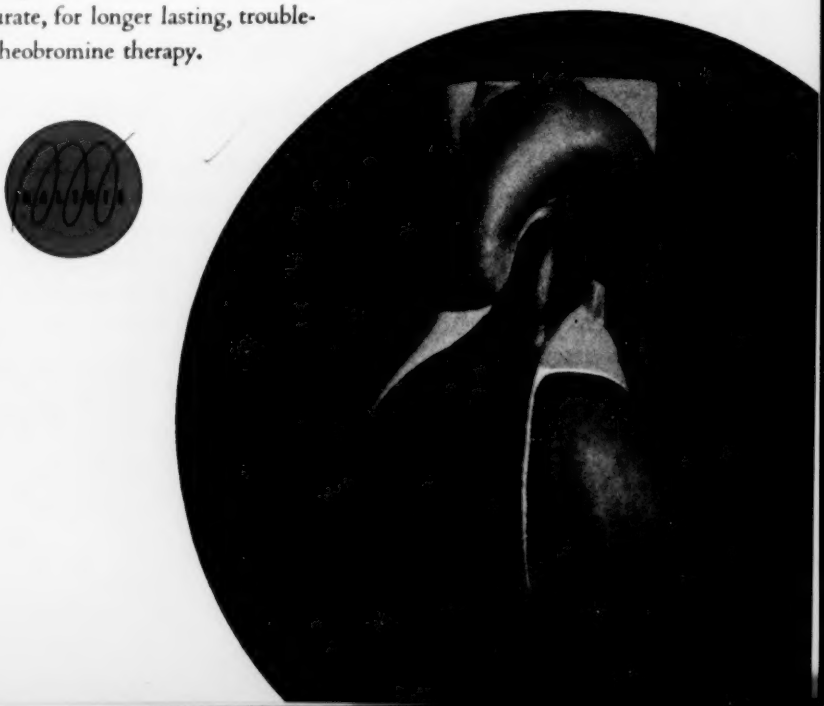

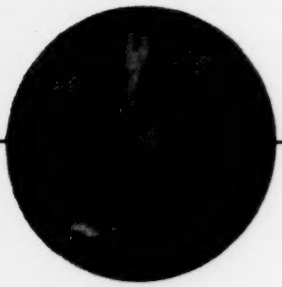

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as removal of the gallbladder and all stones from the common duct, with T-tube drainage of the common duct.

If the pancreatitis is localized to one portion of the organ, which is seldom the case, division of the sphincter of Oddi would probably be of little benefit. However, when no stone or tumor is present, and the entire organ is chronically indurated, sphincterotomy certainly should be considered and will probably be of benefit in the majority of cases.

HUGH G. TROUT, JR., M.D.
Roanoke, Va.

The Premature Infant*

Comment invited from
R. H. McCreary, M.D.
Maurice Berger, M.D.

► TO THE EDITORS: Dr. John P. Fletcher has given much valuable information on the premature infant. He is to be congratulated.

I think that the premature infant is generally less than 18 in., instead of less than 14 in. as stated in the article.

It seems to me that the literature does not stress sufficiently the following common errors:

- Too immediate resuscitation which does not give the infant an opportunity to initiate breathing
- Too drastic resuscitation, such as indiscriminate administration of respiratory stimulants
- Inadequate dosage of vitamins, particularly of vitamin C, in the neonatal period

Emphasis should be put on:

- Adequate and proper psychologic preparation of the mother for and during pregnancy
- The control of precipitate deliveries to lessen the occurrence of intracranial hemorrhages
- Instruction in dietary care, such as might be available in the smaller hospitals and centers.

R. H. MC CREARY, M.D.
Arnprior, Ont.

► TO THE EDITORS: Dr. Fletcher's article is a comprehensive and practical review of a very important problem. Although the prognosis for premature infants in large centers has been decidedly better in recent years, the cross-country mortality is still high.

The dissemination of the knowledge embodied in Dr. Fletcher's fine article will be of real value.

MAURICE BERGER, M.D.
Winnipeg

*MODERN MEDICINE, May 15, 1951, p. 71.

Schedules for Penicillin Treatment of Syphilis*

Comment invited from
Lea C. Steeves, M.D.

► TO THE EDITORS: Dr. Arthur C. Curtis and associates indicate treatment of cardiovascular syphilis as being 600,000 units of penicillin daily for ten days or twice weekly for five weeks, the only qualification being no decompensation. In our brief experience we have found that the presence of angina pectoris presumably due to coronary ostium involvement is a symptom that dictates the utmost caution, including preparation with saturated solution of potassium iodide in increasing doses, as tolerated, three times daily prior to the use of any penicillin.

LEA C. STEEVES, M.D.
Halifax, N.S.

*MODERN MEDICINE, July 1, 1951, p. 88.

Diagnostix

Here are diagnostic challenges presented as they confront the consultant from the first clue to the pathologic report. Diagnosis from the Clue requires unusual acumen and luck; from Part II, perspicacity; from Part III, discernment.

Case MM-203

THE CLUE

ATTENDING M.D: The patient I want you to see today came to the hospital last night. I saw her for just a moment before you came in this morning. The diagnosis of the resident is psychoneurosis, hysteria.

VISITING M.D: Sounds interesting *(Enters large ward, a lean 25-year-old woman is lying in bed by the window. She is holding her hands on her thighs as if in pain).*

ATTENDING M.D: Briefly, she had diarrhea yesterday morning. She had quarreled with her boy friend the night before and was disturbed because she had to continue to work in the same office with him. She felt terribly ill all morning, chilly, weak, and somewhat nauseated as if coming down with a cold. On her way from the lunch room to the office she noted weakness in both legs. She got up from her desk an hour later, was unable to walk, and fell to the floor.

VISITING M.D: Any subjective symptoms?

ATTENDING M.D: Only some burning and tingling in hands and feet attributed by the resident to hyperventilation.

VISITING M.D: Go on.

ATTENDING M.D: Last night she had considerable pain in both thighs. She called her boy friend who brought her here because he thought she had polio. The resident did a spinal tap last night: the fluid had no cells and the Pandy reaction was negative.

PART II

VISITING M.D: How was she when you saw her today?

ATTENDING M.D: About the same as last night, but the hand clasp was weak bilaterally.

VISITING M.D: Is anything else pertinent in the past history or present illness?

ATTENDING M.D: No. The reflexes were hypoactive, almost absent. I thought that the muscles seemed moderately tender in all parts of the body.

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BENADRYL® HYDROCHLORIDE	80 mg.
AMMONIUM CHLORIDE	12 gr.
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BENYLIN EXPECTORANT rapidly relieves cough because it combines BENADRYL hydrochloride (10 mg. per teaspoonful), with established non-narcotic remedial agents. BENYLIN EXPECTORANT liquefies mucous secretion, relaxes the bronchial musculature, soothes irritated mucosa and relieves nasal stuffiness, sneezing and lacrimation. Its mildly tart taste appeals to adults as well as children.

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DOSAGE: One or two teaspoonfuls every two to three hours. Children, one-half to one teaspoonful every three hours.
Supplied in 16-ounce and 1-gallon bottles.

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VISITING M.D: *(Examining patient)* I find all the deep tendon reflexes and abdominals absent; the Babinski is normal. Muscle tenderness is as you described. The neck is not stiff; the fundi are normal. The rest of the physical and neurologic examination shows nothing unusual except for definite muscle weakness in both hands and legs and, perhaps, a suggestion of a left facial weakness. . . . Better have another spinal fluid examination—a quantitative protein. The Pandy is unreliable, better than nothing, of course, but I've been fooled too many times by a negative Pandy with an elevated protein. The woman obviously doesn't have poliomyelitis—the muscle weakness is diffuse and paresthesias are rare with polio. The sensory changes, rapid onset, muscular pain, and now the facial weakness with areflexia and a quickly changing picture, all suggest the diagnosis.

PART III

ATTENDING M.D: *(Same afternoon, 2 o'clock)* The patient does not appear ill—is alert, quite aware of everything about her, keenly interested, afebrile, yet alarmingly weak. I wondered about the hysteria, but the spinal fluid showed 180 mg. of protein and 2 lymphocytes. She has a moderate leukopenia, but other than that all laboratory work and roentgenograms are unrevealing.

ATTENDING M.D: Why were you so sure she didn't have polio or psychoneurotic illness?

VISITING M.D: Well, as I said, one rarely sees sensory involvement in poliomyelitis, and the motor involvement is limited to muscle groups. The cell-protein dissociation is helpful, of course. Peripheral neuritis is usually febrile and only peripheral. Facial paralysis occurs in over one-third of the cases, and if you will look now you will see facial diplegia. I think you should get a heterophil antibody titer. Everyone should do this in suspected or diagnosed cases of Guillain-Barré syndrome: there seems to be some relationship in the few cases reported.

PART IV

ATTENDING M.D: Is the disease infectious?

VISITING M.D: No, but it is apt to be a dangerous disease. It is extremely important to put the patient to bed and keep her there for a long time. When proper diagnosis is made the first day or two and the patient is kept in bed, the course of the disease is rarely stormy or protracted. We cannot always assure complete recovery. Some of the patients die. A patient in the hospital last month was in the Drinker respirator for five days but made a complete recovery. We must treat the condition symptomatically but hopefully. Respiratory failure in this disease, as in myasthenia gravis, must be faced as one would a possible drowning. You shouldn't give up too soon nor think a situation hopeless. These patients remain alert to what goes on about them though their faces may be paralyzed and their speech dysarthric.

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reliable spasmolysis

hydrocholeretic flushing of biliary tract

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mild, natural laxation without catharsis

While of special value in functional dyspepsia, *Decholin/Belladonna* is, of course, treatment of choice in biliary tract disorders for thorough and unimpeded flushing of the biliary system.

DOSAGE: One or, if necessary, two *Decholin/Belladonna* tablets three times daily after meals.

PACKAGING: *Decholin* (brand of dehydrocholic acid) *with Belladonna*, bottles of 100 tablets. Each tablet contains dehydrocholic acid 3¾ gr. and belladonna ⅛ gr. (equivalent to tincture of belladonna, 7 minims).

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Basic Science Briefs

Biophysics

Vitamin C for Capillary Fragility

The rapid reduction of capillary permeability produced by ascorbic acid probably results from effects on the hyaluronidase-hyaluronic acid reaction in the pericapillary sheath. Fragility is decreased within ten minutes after a large intravenous dose, whereas action on the intercellular cement of the vessel walls would require eighteen to twenty-four hours. Spread of colored hyaluronidase injected into rabbits' skin was measured by Dr. Edmond Reppert and associates of Northwestern University, Chicago, before and after administration of 500 mg. of vitamin C. The area of spread was decreased in ten minutes from 5.43 to 1.51 sq. cm.

Proc. Soc. Exper. Biol. & Med. 77:318-320, 1951.

Circulation

Blood Oxidation by Resected Lung

Diversion of blood during operations on the heart may be possible with an isolated lung. Venous blood can be oxygenated with no foaming or hemolysis, which occur with most mechanical methods. Dr. George R. Gerst and associates of Montefiore Hospital, New York City, removed the heart and lungs of a cat after death from exsanguination. The pulmonary artery and veins of one side were cannulated, and the opposite pulmonary vessels were tied. A tracheal cannula was inserted and connected with a source of oxygen under intermittent positive pressure, which inflated the lung twelve times a minute. The animal's blood was placed in a reservoir, kept under slight suction by a rotary pump, and circulated through the lung. A high oxygen content was maintained for intervals of sixty to ninety minutes. Intensely cyanotic blood from another animal was also oxygenated, though not as completely. No effort was made to maintain sterility or body temperature of the isolated lung.

Science 114:258-259, 1951.

"No, I'm not Mrs. Smith, but my symptoms are just like hers."

Circulation

Pancreatectomy and Atherosclerosis

Pancreatic deficiency intensifies atherosclerosis in chicks. After pancreatectomy, cockerels fed plain mash have normal plasma lipid and glucose levels, but spontaneous atherosclerotic lesions in the great vessels are slightly more frequent and much more severe than with the gland intact. When the birds are given mash with 2% cholesterol and 5% cottonseed oil, atherogenesis is greatly increased and blood cholesterol raised. Dr. J. Stamler and associates at Michael Reese Hospital, Chicago, emphasize that neutral fat is a factor, since if cholesterol is fed without the oil, reactions are about the same as in chicks not deprived of the pancreas.

Circulation 4:255-261, 1951.

Hematology

Frozen Erythrocytes Viable

Red blood cells recovered from rabbit's blood diluted with glycerol and frozen at −79° C. are viable when thawed and placed back into circulation. Recovered cells labeled with radioactive phosphorus were injected into the donor animals, reports Dr. H. A. Sloviter of the National Institute for Medical Research, Mill Hill, London. Radioactivity per unit volume of red blood cells was then calculated from samples withdrawn within five minutes and at later intervals. Apparently the erythrocytes survive freezing and are capable of normal function for several days after injection.

Lancet 260:1350-1351, 1951.

Neurology

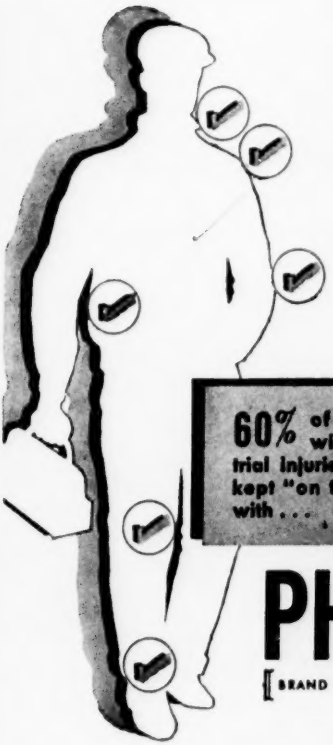
Hypothalamic Feeding Center

The impulse to eat is regulated by a minute region in the hypothalamus. In albino rats, Drs. Bal K. Anand and John R. Brobeck of Yale University, New Haven, Conn., located such an area in the extreme lateral portion of the lateral hypothalamus at the same rostrocaudal level as the ventromedial nucleus. If small bilateral electrolytic lesions are made by applying a current of 1 milliampere for fifteen seconds to this area, the animals stop feeding and starve to death. If only 1 lesion is made or the site is moved as little as 0.5 to 1 mm., food intake is reduced to a lesser degree or for only a few days. If bilateral lesions are made in and around the ventromedial nucleus, subjects overeat and become obese, but voracious appetites are checked and starvation induced by subsequent injury of the lateral centers.

Proc. Soc. Exper. Biol. & Med. 77:323-324, 1951.

"Let's see now, where was I?"

Dramatic RELIEF OF SKELETAL-MUSCLE SPASM BEFORE THE PATIENT LEAVES THE OFFICE...



PHYATROMINE brings about gratifying improvement in conditions accompanied by muscle spasm—within 30 minutes of injection.[1,2] Spasm-locked muscles relax almost immediately, with resultant relief of pain and increase in joint mobility; relief lasts for three to five days (or longer after repeated injections).[1,2]

Conditions in which the accompanying spasm responds favorably to **PHYATROMINE** injections include: wrenched neck, back, or shoulder; pulled ligaments; lumbosacral and sacroiliac strains; myositis; bursitis; painful fixation of the knee joint; spasm due to shrapnel wounds; and certain cases of rheumatoid arthritis and osteoarthritis.[1,2,3,4]

PHYATROMINE®

[BRAND OF PHYSOSTIGMINE SALICYLATE AND ATROPINE SULFATE]

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FORMULA:
Each cc. contains:
Physostigmine Salicylate..... 0.6 mg.
Atropine Sulfate..... 0.6 mg.
In isotonic solution of sodium chloride.

SUPPLIED: List No. 1740: 1-cc. ampuls, boxes of 25; 30-cc. multiple-dose vials.

REFERENCES: 1. Marshall, W.: Journal-Lancet 70: 391 (Oct.) 1950. 2. Stahmer, A. H.: Wisconsin M. J. 49: 1020 (Nov.) 1950. 3. Stahmer, A. H.: To be published. 4. Goldman, J., and Cohen, A.: Journal-Lancet 66: 415 (Dec.) 1946.

Kremers-Urban Company
Pharmaceutical Chemists Since 1894
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the most effective iron therapy known[1-7]

More Effective than ferrous sulfate

mol-iron®

a co-precipitated complex of ferrous sulfate and molybdenum oxide

Better Tolerated than ferrous sulfate

Extensive clinical investigation has consistently revealed that Mol-Iron produces a hemopoietic response characterized as "... striking ... dramatic ..."[1] "... rapid ..."[1,2] ... bringing about a "... better prognosis ..."[3] resulting in a "... greater increase in hemoglobin concentration."[4]

From a comparative study Dieckmann[1] concludes, "We have never had other iron salts so efficacious in pregnant patients."

Mol-Iron has repeatedly been reported to be unusually well tolerated.[2-5,7,8] Kelly[8] states that Mol-Iron is "... generally well tolerated by the majority of patients in whom ... unmodified ferrous sulfate has repeatedly induced symptoms of marked ... intolerance."

to meet all your needs in iron therapy, mol-iron is presented in these convenient forms:

mol-iron tablets

small, easily swallowed, not enteric coated—a convenient form for older children and adults.

mol-iron liquid

pleasantly flavored and particularly adapted to treatment of children, but may be given whenever liquid medication is preferred.

mol-iron drops

convenient "drop dosage" form for prophylaxis in infants. Highly concentrated: at least 1 mg. of elemental iron per drop—very palatable.

mol-iron with calcium and vitamin d

an ideal dietary supplement for the pregnant or lactating patient; supplies calcium and phosphorus in an optimum ratio and vitamin D in adequate amount.

mol-iron with liver and vitamins

for hypochromic anemia associated with excessive demand on nutritional reserves. Provides Mol-Iron, dried *whole* liver, vitamin B_{12}, and generous quantities of the other B complex vitamins.

White's

WHITE LABORATORIES, INC.
Pharmaceutical Manufacturers
KENILWORTH, NEW JERSEY

1. Dieckmann, W. J. and Priddle, H. D.: Am. J. Obstet. & Gynec. 57:541, 1949.
2. Chesley, R. F. and Annitto, J. E.: Bull. Margaret Hague Mat. Hosp. 1:68, 1948.
3. Telso, P. J.: J. Insurance Med. 4:31, 1948-49.
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7. Neary, E. R.: Am. J. Med. Sc. 212:76, 1946.
8. Kelly, H. T.: Penn. M. J. 51:999, 1948.

Short Reports

Endocrinology

Lye Stricture and Cortisone

Scar tissue contracture after a lye burn of a rabbit's esophagus is partly or entirely prevented by immediate treatment with cortisone, but fatal infection often develops. Dr. Norman Rosenberg and associates of St. Peters General Hospital, New Brunswick, N. J., find that after application of 5% sodium hydroxide solution, only 1 of 7 surviving rabbits given cortisone had stricture, in contrast to 7 of 8 unprotected animals. However, 10 of 17 died with cortisone but only 2 of 9 without. The infectious complications, which usually began soon after injury, included suppurative mediastinitis, empyema, lung and liver abscesses, pneumonia, and esophageal ulceration with perforation and massive hemorrhage.

Arch. Surg. 63:147-151, 1951.

"I guess I should tell you, Doctor, I'm something of a stuffed shirt."

Dermatology

Heparin and Dermatoses

Development of allergic dermatitis is apparently greatly inhibited by heparin. Drs. H. Gentele and Hj. Holmgren of Karolinska Institute, Stockholm, report that an allergic skin response, consisting of hyperemia, edema, cellular infiltration, and increased alkaline phosphomonoesterase activity, is ordinarily produced in guinea pigs sensitized with cutaneous dinitrochlorbenzene in acetone, when reinjected with the chemical. These skin changes are much less severe if the animals are protected by intraperitoneal injections of 1% heparin the day before the test and on four subsequent days.

Acta dermat-venereol. 31:322-330, 1951.

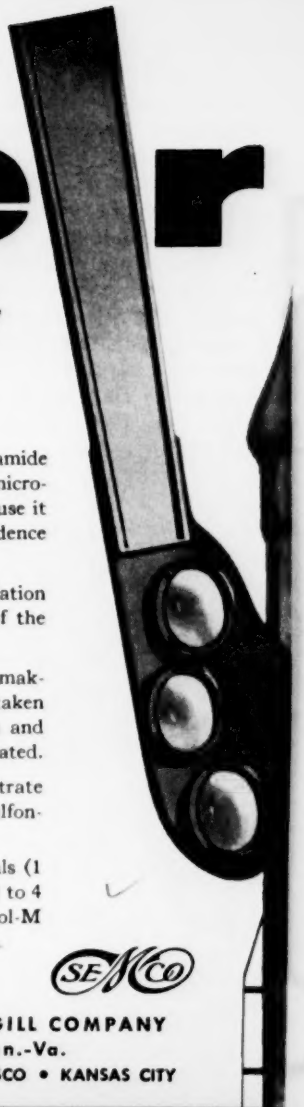
Medical Education

Course for Displaced Physicians

New York University is offering a year of special training to graduates of foreign medical schools who wish to practice in the United States but who lack certain requirements. Work starts this fall, announces Dr. Robert Boggs, dean of the postgraduate school. Before admission, every candidate must be certified as acceptable for examination by a state licensing board. In New York, examinations for licensure may be taken after completion of the course and two additional years of hospital internship or residency.

safer

in Sulfonamide Therapy



Aldiazol-M brings a high degree of safety to sulfonamide therapy. This alkalizing suspension of equal parts of microcrystalline sulfadiazine and sulfamerazine is safer because it decreases the danger of crystalluria and reduces the incidence of allergic reactions. It offers these advantages:

Greater Efficacy, achieved through decreased acetylation of the absorbed sulfonamides, and rapid absorption of the microcrystalline form.

Highly Palatable. Aldiazol-M is pleasantly flavored, making it acceptable to virtually all patients. It is readily taken by children, making for universal patient cooperation and permitting its use whenever sulfonamide therapy is indicated.

Greater Urinary Solubility is produced by sodium citrate which increases urinary solubility of the combined sulfonamides by more than 400%.

The maintenance dose of Aldiazol-M is 2 teaspoonfuls (1 Gm. of total sulfonamides) every 4 hours; initial dose, 2 to 4 teaspoonfuls (3 to 6 Gm. of total sulfonamides). Aldiazol-M is available at all pharmacies in pint and gallon bottles.

SE M CO

THE S. E. MASSENGILL COMPANY
Bristol, Tenn.-Va.
NEW YORK • SAN FRANCISCO • KANSAS CITY

Formula

Each teaspoonful (5 cc.) of Aldiazol-M contains:

Sulfadiazine (microcrystalline)	0.25 Gm.
Sulfamerazine (microcrystalline)	0.25 Gm.
Sodium Citrate	1.0 Gm.

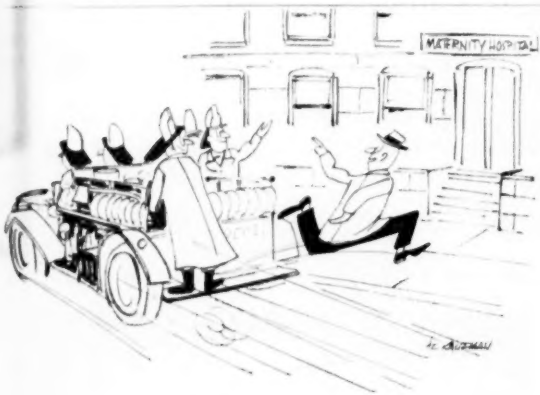
ALDIAZOL-M

Therapy

Adrenalectomy and Hypertension

The most effective procedure for severe arterial hypertension is apparently a combination of bilateral splanchnicectomy, bilateral sympathectomy from the twelfth thoracic to the second lumbar level, and removal of nearly all adrenal tissue. The same results might be obtained by medical depression of sympathetic and adrenal cortical activity. The possible value of adrenalectomy was investigated by Dr. Charles C. Wolferth and associates at the University of Pennsylvania, Philadelphia. As a first step, one adrenal gland was excised in the second stage of Smithwick thoracolumbar sympathectomy in each of 16 cases, but the results were no better than with neurectomy alone. In 15 cases 90 to 100% of adrenal tissue was resected, and in 8 the operation was combined with limited or extensive sympathectomy. Results were the most satisfactory in the final series.

Ann. Int. Med. 35:8-18, 1951.



"Thanks, fellows."

Education

Anatomy Atlas

A three-dimensional colored atlas of human anatomy is being prepared in kodachrome transparencies with matching diagrams by Dr. David L. Bassett of Stanford University and William B. Gruber, research engineer.

Urology

Control of Urinary Stones

Strongly acid urine may prevent development of magnesium ammonium phosphate calculi or dissolve those already formed. Reduction of dietary magnesium is also effective, in the experience of Dr. C. W. Vermeulen and associates at the University of Illinois, Chicago. Large doses of basaljel, composed of basic aluminum carbonate, may control lithiasis by combining with phosphate to form an insoluble compound in the gastrointestinal tract so that the urinary excretion of phosphate is decreased. For comparison, zinc particles were implanted in rat bladders and urine was kept slightly acid. Addition of ammonium chloride to the diet reduced urinary *p*H below 6, prevented lithiasis in 21 animals, and dissolved the preformed stones in 14 of 20. Magnesium was lowered by feeding only Cannon's synthetic diet with loss of about 60 mg. from preformed calculi. Decrease with basaljel was 16 mg.

J. Urol. 66:1-11, 1951.

Concerning the very low Vasomotor response to **UROKON SODIUM 30%**

In a study of **2952** cases at the Massachusetts General Hospital* comparing UROKON with another widely used medium, the following observations were made:

1. Vasomotor reactions were fifteen times more frequent when Medium A was used than when UROKON was used.
2. No serious reactions, such as loss of consciousness, were noted in the UROKON group; one occurred in the Medium A group.
3. Diagnostic quality of x-ray films was not appreciably different with the two media. UROKON appeared to be more rapidly excreted than Medium A.

*Robbins, Colby, Sosman and Eyler—Department of Radiology and Urological Service, Massachusetts General Hospital.

Urokon Sodium Brand of Sodium Acetrizoate

For a reprint of the complete study as published in the May 1951 issue of Radiology clip and mail coupon below.

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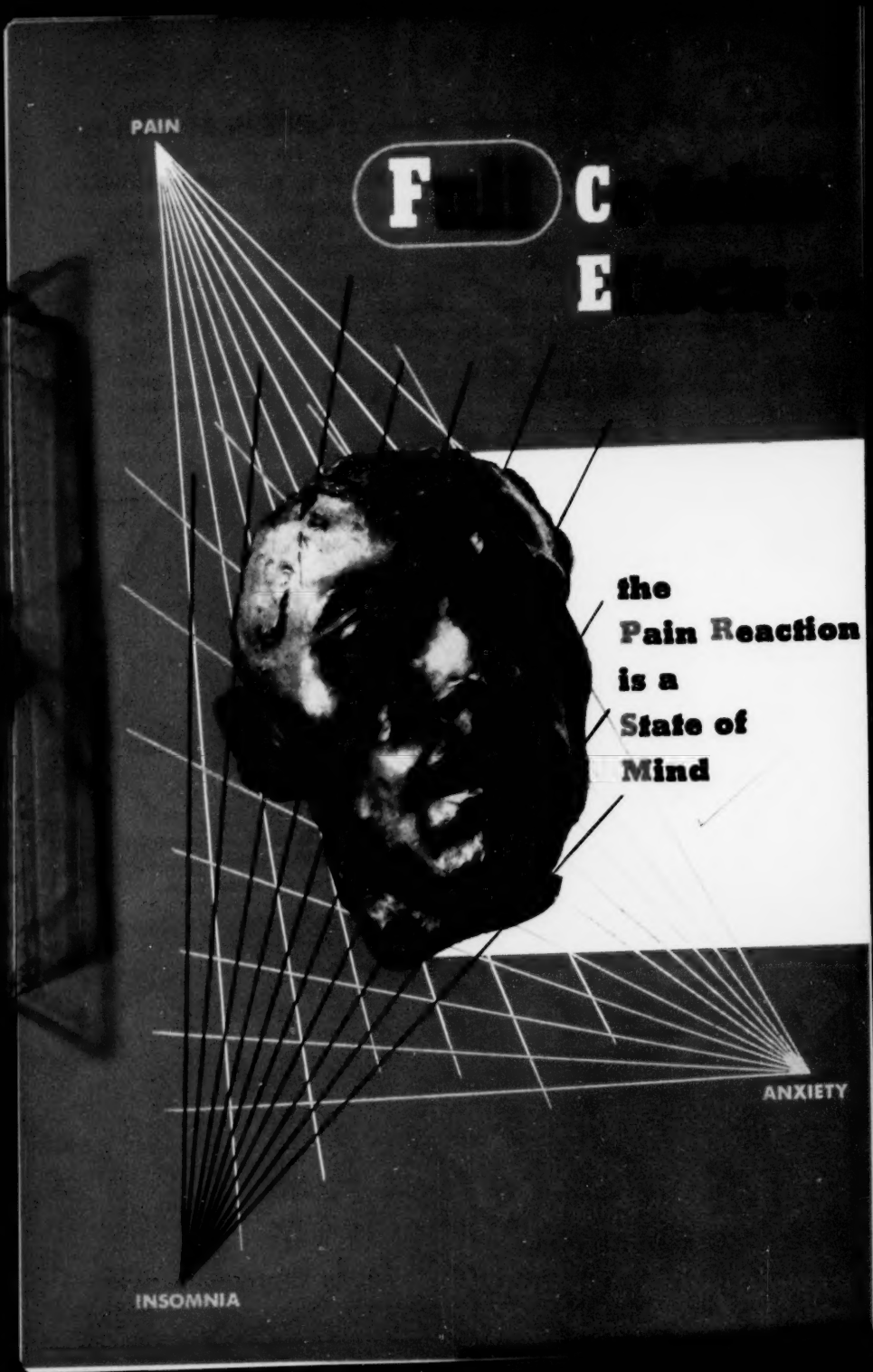
PAIN
F C
E
the
Pain Reaction
is a
State of
Mind
ANXIETY
INSOMNIA

New Devices

Sponge for Lung Surgery

Spread of infection into the extrapleural space is a serious outcome of extrapleural plombage for tuberculosis. This complication can be prevented by a synthetic sponge that sets up a fibrogenic reaction. Formalinized polyvinyl alcohol, a soft white substance with a water plasticizer, is recommended by Dr. Allan Hurst and associates of the National Jewish Hospital and University of Colorado, Denver. The sponge is shrunk about 25% by boiling and trimmed to fit the cavity. The lung is stripped as in extrapleural pneumonolysis, slightly more than seems indicated by the radiogram. The plastic is packed firmly, and the chest is closed without drainage. Postoperatively, temperature is slightly elevated, and fluid may require aspiration. Plastic sponge was employed in 17 plombage operations on 14 patients to fill the space some time after extrapleural pneumothorax, and as a prosthesis following resection. In most cases bacilli rapidly disappeared from sputum.

Dis. of Chest 20:154-158, 1951.

Obstetrics

Radioiodine in Pregnancy

Pregnant women should not receive radioactive iodine after the first trimester, if other therapy can be substituted. Single doses of I^{131} were injected into mice at different stages of gestation, and results were analyzed by Dr. Harold Speert and associates at Columbia University, New York City. Iodine was observed in the fetus after injection on the sixteenth day of pregnancy, when follicles begin to appear in the thyroid, and the rate of uptake of I^{131} increased rapidly near term. Injection on or after the seventeenth day retarded neonatal growth. Thyroids of offspring were fibrotic, later hyperplastic with adenoma formation, and eventually contained colloid. At ages of 9 to 12 months, one-third of survivors had chromophobe adenomas of the pituitary. Reproductive performance was normal in the male offspring but possibly impaired in the females.

Surg., Gynec. & Obst. 93:230-242, 1951.

Neurosurgery

Vagotomy for Pancreatitis

Acute pancreatitis may sometimes result from psychic stimulation of secretion, especially if the flow is obstructed by spasm of the pancreatic duct or sphincter of Oddi. Thus, vagotomy may be warranted for recurrent acute inflammation, since the operation would reduce the distractions from higher nerve centers but not impair ordinary function. The value of nerve sections was demonstrated in dogs by Dr. William R. Schaffarzick and associates of the Thayer Veterans Administration Hospital and Vanderbilt University, Nashville. Acute attacks were produced by ligation of ducts and supplemental tube feedings of evaporated milk to produce the high enzyme secretion typical of vagal stimulation. After vagotomy, both elevation of serum amylase and damage to tissue were much less than when the operation was not done.

Surg., Gynec. & Obst. 93:9-15, 1951.

No activity pause at her menopause

Your patient may continue her normal activities even to the extent of keeping pace with her daughter. She will be greatly encouraged, especially when the effectiveness of therapy measures up to expectations. In estrogen therapy an especially useful product . . . . . is:

BENZESTROL

2,4 (p-hydroxyphenyl) - 3 – ethyl hexane

"Liver function tests, blood studies and urine examinations showed no toxic effects of the synthetic substance BENZESTROL."*

Supplied:

Oral: *Benzestrol* Tablets
0.5 Mg., 1.0 Mg., 100's & 1000's, 2 Mg., 5 Mg. — 50's — 100's — 1000's.

***Benzestrol* Elixir:**
1.5 Mg. per fluid ounce, Pint Bottles.

Intramuscular: *Benzestrol* Solution in Oil; Aqueous Suspension with 5% Benzyl Alcohol 5.0 Mg. per cc. 10cc Vials.

Local: *Benzestrol* Vaginal Tablets
0.5 Mg. 100's.

AVERAGE DOSE: Menopause — 2 to 3 Mg. daily orally or ½ to 1cc parenterally every 3 days.

NOTE:
Frequently, medication other than estrogens may be required during the menopause. Pleasant tasting Elixir Benzestrol is compatible with many substances.

Professional Samples and Literature upon Request

*Reference: MacBride, C. M., et al.: A New Synthetic Estrogen, J.A.M.A., 123: 261-262, 1943.

Schiffelin & Co. 20 Cooper Square, New York 3, N. Y.

Gastroenterology

Colonic Motility Reduced

A spastic, irritable colon may be relaxed by Banthine, judging from the quieting influence of the drug on natural activity. Balloon tracings of the descending colons of healthy persons after oral doses of 25 to 100 mg. or intravenous injection of 15 to 25 mg. were obtained by Dr. Fred Kern, Jr., and associates of the New York Hospital–Cornell Medical Center, New York City. Banthine often inhibited bowel contractions for several hours. Atropine and two synthetic forms, Trasentine and Syntropan, had no significant effect. Tachycardia and other reactions from the Banthine administration were transient and harmless.

Am. J. Med. 11:67-74, 1951.

Nutrition

Invert Sugar Tolerance

Concentrated solutions of invert sugar given intravenously are readily retained by the body and supply a large number of calories per unit of time in a moderate amount of fluid. Dr. Jacob J. Weinstein of George Washington University, Washington, D.C., reports that when 1.5 gm. of 15% invert sugar per kilogram of body weight is given per hour, 96.4% is utilized by the body. Fructose is retained in greater quantities and more rapidly assimilated by the human body than is glucose. A 10.6% hemodilution occurs at the end of the infusion, representing increase in blood volume of between 450 and 500 cc.

J. Lab. & Clin. Med. 38:70-77, 1951.

Radiobiology

New Dosimeter

Measurement of the amount of radiation to which an individual is exposed may be quickly supplied by the self-developing films now produced commercially for cameras. The device is a miniature film pack which may be pinned to the shirt or attached to a dog-tag around the neck (see illustration). The amount of radiation exposure is shown after the film is developed, a procedure which requires only one minute with this type of film. Maj. John E. Pickering of the School of Aviation Medicine, Randolph Field, Tex., explains that such dosimeters can be made available at low cost to civilians and might be practical for workers in bombed areas or for the entire population of a target city.

Military Medicine

Treatment of Frostbite

Rapid rewarming may become the basis of improved treatment of frostbite injuries. Animal experiments at the U.S. Air Force School of Aviation Medicine, Randolph Field, Tex., indicate that the hazard of gangrene is lessened if frozen parts are thawed rapidly by immersion in warm water. A hind leg of each of 310 rodents was immersed in an alcohol bath at below freezing temperatures for thirty minutes. Then 168 were rapidly rewarmed by water immersion, and 142 were thawed in room temperature air. Lt. Col. Robert B. Lewis found that skin necrosis was almost entirely prevented by rapid rewarming, whereas 20 to 90% of the air-warmed legs, depending upon the degree of exposure to the cold, became gangrenous. Rapidly rewarmed limbs also had much better restoration of function. The major disadvantage of rapid thawing is pain.

► To prevent gangrene, frozen tissues should be thawed as quickly as possible by immersion in warm water. Drs. Robert E. Lempke and Harris B. Shumacker, Jr., find that mice, rats, and rabbits with frozen feet fare best when the feet are thawed in water at a temperature of about 108° F., though even ice water is more effective than air at room temperature because of the better conductivity of water. The factors aiding recovery were determined at the University of Indiana, Indianapolis. Rapid thawing cuts short the period of vasoconstriction that tends to follow frostbite and reduces capillary stasis. Anoxic tissues are immediately provided with the best possible blood flow, and the likelihood of vascular thrombosis is decreased.

Angiology 2:270-282, 1951.

Virology

Ultrasound and Infection

The infective power of microorganisms may be raised or lowered by ultrasound, according to the rate of vibration. If employed in preparation of vaccines, the physical agent may prove superior to chemicals now in use. Dr. Nelson Newton of the Battelle Memorial Institute, Columbus, exposed tobacco mosaic virus to ultrasonic waves. A frequency of 7 megacycles shattered individual rods and reduced infectivity 95%. With lower intensities, viral potency was increased by scattering of clustered organisms or by separation of units in end-to-end chains. More refined ultrasonic treatment may uncover desirable antigens or revive old vaccines.

Science 114:185-186, 1951.

Nutrition

Food Sterilization

Radioactive cobalt preserves food by killing bacteria in twenty-four to forty hours of exposure. Dr. Lloyd E. Brownell of the University of Michigan, Ann Arbor, observed no deterioration when irradiated milk and beefsteak were sealed in plastic bags and stored at room temperature for three weeks.

BOTH **toughness** AND *softness*

ARE ESSENTIAL IN CONSTIPATION MANAGEMENT

In KONDREMUL, each micro-globule is coated with a tough film of chondrus which resists gastrointestinal enzymic action—yet KONDREMUL pours freely from the bottle, is of velvety softness.

KONDREMUL, being finely subdivided, contributes soft bulk to the dry fecal residue, easing elimination and encouraging regular bowel habits.

N.N.R.

- **KONDREMUL** Plain (containing 55% mineral oil).
- **KONDREMUL** with non-bitter Extract of Cascara (4.42 Gm. per 100 cc.)
- **KONDREMUL** with Phenolphthalein—.13 Gm. (2.2 grs.) per tablespoonful.

Kondremul

... AN EMULSION OF MINERAL OIL AND IRISH MOSS

Also in tablet form

KONDRETABS

—the original Irish Moss—Methyl Cellulose Bulk Laxative in Tablet Form.

KONDRETABS induce soft, easily eliminated bulk—no bloating, griping, impaction. Convenient, pleasant, easy to take.

THE E. L. PATCH COMPANY

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Hematology

Mechanical Blood Oxidizer

An instrument that circulates and oxygenates blood outside the body has been used with success on dogs. Oxygenation is achieved by bubbling gas through the blood. Dr. Frank Gollan and associates of Antioch College, Yellow Springs, Ohio, report that, by means of the apparatus, acute anoxia was prevented in dogs during bilateral pressure pneumothorax and throughout complete respiratory paralysis from curare-like compounds, sodium pentothal, or ethyl ether. Blood is drawn from the lower vena cava with a polyethylene catheter, and oxygen is introduced under pressure in tiny bubbles through a porous membrane. The surplus gas is collected into large bubbles by a silicone antifoam compound on glass beads and allowed to escape. Oxygenated blood is pumped back into an external jugular vein.

Am. J. M. Sc. 222:76-81, 1951.

"Sure I'm sure that the nurse is in the other room."

Physiology

Vascular Dye

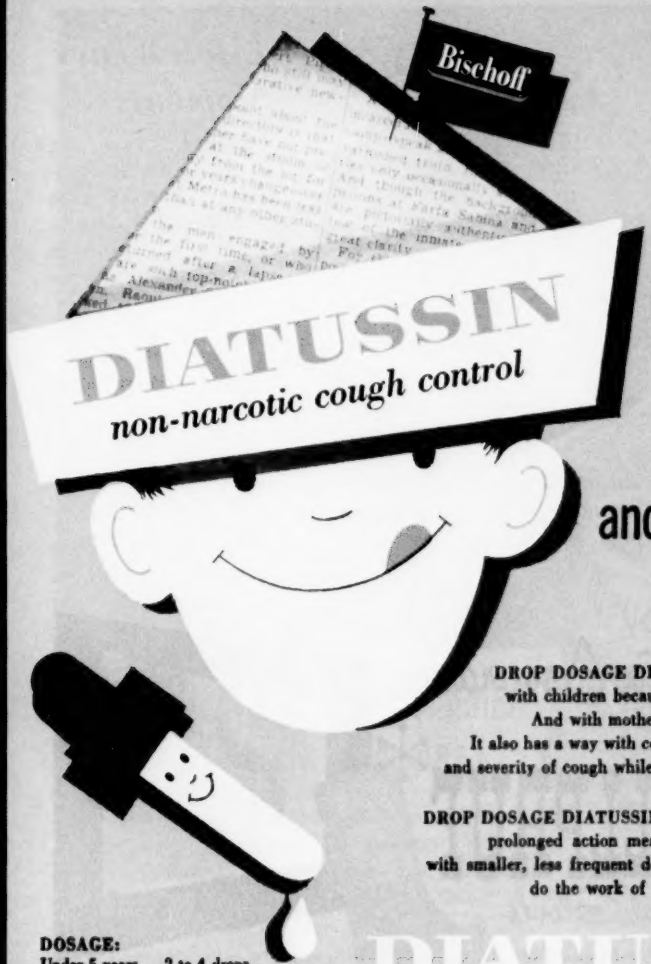
An excellent fluorescent dye for visualization of blood and lymphatic vessels with ultraviolet light is related to Thioflavine-S, but superior. The new agent, Vasoflavine, described by Dr. Jay B. Moses and associates of the University of Rochester, N.Y., is a water extract of Erie-Flavine-S. Satisfactory results were obtained in renal tissue of rabbits. The abdomen was opened, the wound clamped for half an hour, and a 4% solution of Vasoflavine was injected intravenously in a dose of 1 cc. per kilogram of body weight. Kidneys were removed ten seconds later and fresh sections, cleared in USP glycerine, were examined.

Proc. Soc. Exper. Biol. & Med. 77:253-259, 1951.

Biochemistry

DCA and Salt Retention

The sodium-potassium ratio of saliva varies inversely with adrenal cortical activity. Drs. Thomas F. Frawley and Peter H. Forsham of Harvard University, Boston, found averages of 1.3 for healthy subjects, 5 for untreated Addison's disease, and 0.5 for Cushing's syndrome. A 15-mg. dose of desoxycorticosterone acetate reduced the value of normal subjects 25%. In a case of Addison's disease, the salivary sodium-potassium ratio fell from 2.07 to 0.8 in one week after a 60-mg. dose of the trimethylacetate ester of desoxycorticosterone. The value was only 1.1 after four weeks and 1.6 after six weeks. The serum sodium was not changed.



has a way with children... and with cough...

DROP DOSAGE DIATUSSIN "has a way" with children because it's easy to take. And with mothers because it's easy to give. It also has a way with cough—it reduces the frequency and severity of cough while increasing its productivity.

DROP DOSAGE DIATUSSIN's high concentration and prolonged action mean effective cough control with smaller, less frequent doses. Two to four drops do the work of spoonfuls of syrup.

DOSAGE:
Under 5 years... 2 to 4 drops three or four times daily.
Over 5 years... 5 drops three or four times daily.

FORMULAE:

	DIATUSSIN
Thyme (alcoholic extract)	39%
Drosera (alcoholic extract)	39%
Ethyl alcohol	22%

	DIATUSSIN Syrup
Thyme and Drosera, equal parts (alcoholic extracts)	5%
Ethyl alcohol	5%
Aqueous dextrose vehicle	90%

Supplied in 6 cc. bottles with dropper; DIATUSSIN Syrup in 4 oz. and 1 pint bottles (each teaspoonful contains two drops of the extract).

DIATUSSIN

easy-to-take, non-narcotic cough control

DROP DOSAGE DIATUSSIN is both well tolerated and palatable. It can be dropped directly on the tongue or on a spoonful of dessert or cereal. For treating cough in infants and young children without narcotics, DIATUSSIN is unexcelled.

ERNST BISCHOFF COMPANY, INC. • Ivoryton, Conn.

"Your breath aroused my suspicions. Then when you tell me your urinary output has decreased from a fifth to a pint, the diagnosis is made."

Life's Weary Moments

Think of a gag that fits the illustration. For every issue a new gag is published and the author is sent $5. The November 15 winner is

Leonard Essman, M.D.
New York City

Mail your caption to The Cartoon Editor Caption Contest No. 1 MODERN MEDICINE 84 South 10th St. Minneapolis 3, Minn.

How to halt the "Chain Reaction" of Cow's Milk Allergies!

Infants allergic to the lactalbumin of cow's milk often present a "chain reaction" of clinical problems... digestive upset, colic, diarrhea, vomiting and other symptoms. In almost all of these cases, however, *all* symptoms are promptly relieved upon substituting goat milk for cow's milk in the infant formula.

Meyenberg® Evaporated Goat Milk is nutritionally equivalent to cow's milk and contains animal protein of high biological value. Wherever goat milk is indicated in the patient's diet, prescribe Meyenberg.®

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Doctor to Doctor

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Mail your caption to The Cartoon Editor
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No. 2
MODERN MEDICINE
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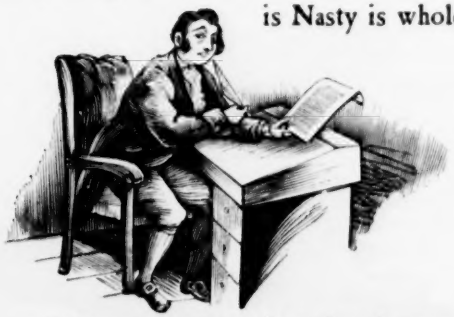
"So what? Patients driving larger cars than that owe me money!"

1827...and in his "Cook's Oracle," Dr. William Kitchiner stated his firm belief in "the purest Epicurean principles of indulging the Palate, as far as it can be done without injury or offence to the Stomach, and forbidding nothing but what is absolutely unfriendly to Health.

"This is by no means so difficult a task as some gloomy philosophers [uninitiated in Culinary Science] have tried to make the world believe—who seem to have delighted in persuading you, that every thing that is Nice must be noxious;—and that every thing that is Nasty is wholesome."



Over 100 years ago—but the doctor was on the right track

Today, Gerber's follow the same general principles, brought carefully up to date by 1951's expert medical and nutritional knowledge. So that you can count on Gerber's strained foods for the qualities you expect of special foods for delicate digestive systems: Gerber's are low in fiber content, blandly seasoned . . . yet processed to retain nutritive values, along with appetizing true color and true flavor.

Gerber's "Special Diet" book gives patients a variety of tempting recipes, based on strained foods . . . so they're likely to follow directions faithfully . . "indulging the Palate without injury or offence to the Stomach."

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Our Office Nurse

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"Very funny, Miss Jones. My partner is a psychiatrist and I'm a proctologist so we specialize in 'Odds and Ends.'"

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Now, you can help your patients who should give up coffee, in an even more tangible way... by actually giving them a generous trial supply of POSTUM, with your compliments. Simply use the coupon below—and we will gladly send you, without charge or obligation, our special Professional pack of 12 trial-size packages of INSTANT POSTUM. The handy order blank below is for your convenience.

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While many people can drink coffee or tea without ill-effect—for others, even one to two cups may result in indigestion, hypertension and sleepless nights. *See "Caffein and Peptic Ulcer" by Drs. J. A. Roth, A. C. Ivy, and A. J. Atkinson —A. M. A. Journal, Nov. 25, 1944.*

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J. Urol. 66:305-314, 1951.

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"must be highly recommended for the rapidity of its healing action"[1]

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the pioneer external cod liver oil therapy

infants with diaper rash
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intertrigo, chafing, irritation
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DESITIN OINTMENT is a non-irritant blend of high grade, crude Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed.
Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.

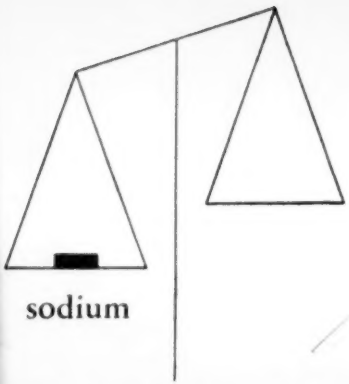
*write for **samples** and reprint*

DESITIN CHEMICAL COMPANY 70 Ship Street • Providence 2, R. I.

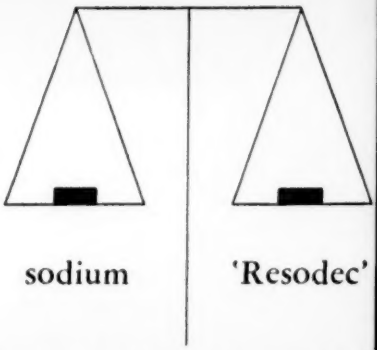
1. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.

'Resodec' for sodium control

not a diuretic! not a salt substitute!



Sodium imbalance causes edema



'Resodec' restores sodium balance

What it is: 'Resodec' is a remarkable new substance* that has the ability to remove excess sodium from the contents of the intestinal tract and to carry it out of the body in the feces.[1]

What it does: 'Resodec' produces the approximate effect of *halving* the patient's salt intake—thus assuring adequate sodium control, with a minimum of dietary restriction.

For complete details, dosage directions and contraindications, see professional literature—available upon request.

the first positive means of achieving adequate sodium control in congestive heart failure

Smith, Kline & French Laboratories, Philadelphia

'Resodec' Trademark *Polycarboxylic cation exchange compound

1. Hay, M.D., and Wood, J.E., Jr.: Ann. Int. Med. 53:1130 (Nov.) 1960.

Another report* of 'Resodec' therapy in a congestive heart failure case

(average reading time: 2 minutes)

"NAME: Patient E.R.C. HISTORY No.: 50946

AGE: 67 - Male

DIAGNOSES: Hypertensive heart disease, cardiac enlargement, auricular fibrillation, and intermittent congestive heart failure, questionable rheumatic heart disease with mitral insufficiency co-existing."

RESULTS: "In retrospect this patient has obviously benefited from 'Resodec' supplementing his low-sodium diet. In spite of digitalization, salt restriction, and frequent injections of mercurial diuretics between January of 1945 and May of 1950, he had had difficulty in remaining compensated, had not been able to work, and had been dyspneic and edematous during most of this period.

"Since the second week of 'Resodec' therapy, however, he has required no further mercurial diuretics, and following the sixth week of resin therapy his digitalis was reduced from .9 to .7 weekly. After losing his edema over an initial three-week period, his weight has remained fairly constant at about 145 pounds. His blood pressure has been reduced somewhat, particularly the diastolic ...

"He has felt much better during this period of therapy, has been able to do light work about his house, and resume activity which was previously denied him. This patient is particularly enthusiastic regarding 'Resodec' therapy and wishes to continue it indefinitely. He has noted no side effects to the 'Resodec' therapy and has not found it unpleasant to taste ...

"He is at present on an intake of 450 mg. of sodium daily, calcium gluconate, two teaspoonfuls twice daily, 'Resodec' 45 Gm. daily, digitoxin .1 mg. daily, and no other medication."

*Excerpts from an actual case history, as reported from a leading medical institution.

Obstetrics

Ecbolic Action of Antihistamines

Some antihistamine substances tend to produce uterine contractions although without definite labor-inducing action even in large dosage. This ecbolic action is weaker than that of the hypophysis, says Dr. Von V. Friedberg of the Universitätsfrauenklinik, Mainz, Germany, but the duration is longer. Therefore, intravenous use of antihistamines should usually be avoided during pregnancy. Thephorin is the only antihistamine studied which possesses anti-ecbolic action, an important consideration during the antihistaminic therapy of pregnant patients.

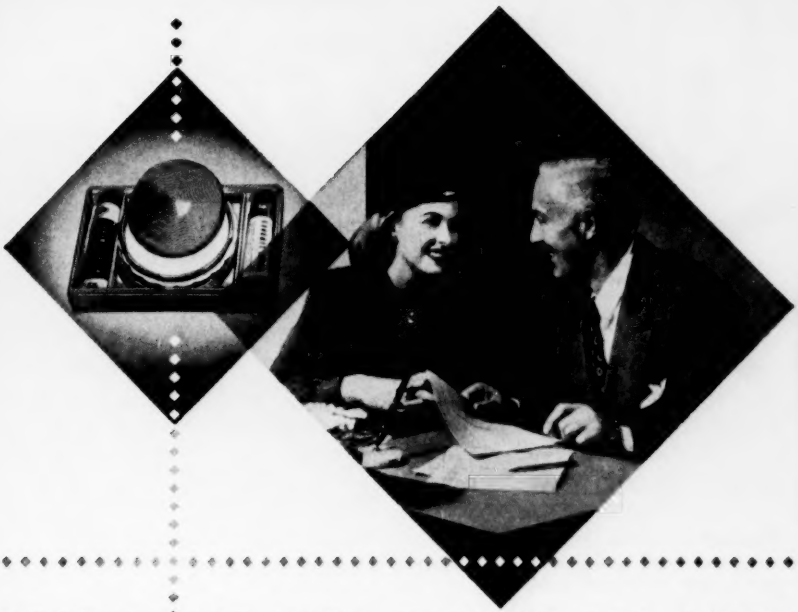
Gynaecologia 132:35-42, 1951.

Endocrinology

Eosinophil Fluctuations

Diurnal rhythm in blood eosinophils occurs and is nearly invariable in persons with ordinary sleeping habits, going from a high 6:30 A.M. value to a low 9:30 A.M. value. Patients with Addison's disease or hypopituitarism have small fluctuations in eosinophil counts through the twenty-four hours but no typical early morning fall. This is also true of patients who have had bilateral adrenalectomy, report Dr. Franz Halberg and associates of the University of Minnesota, Minneapolis. In differential diagnosis, two eosinophil counts, made at 6:30 and 9:30 of the same morning, could therefore be used to eliminate the possibility of Addison's disease or of hypopituitarism. The morning decrease in eosinophils, a part of the regular diurnal rhythm, reflects the fluctuations in endocrine activity, especially in the pituitary and adrenal cortex.

Journal-Lancet 71:312-319, 1951.



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Management of Uterine Myomas

(Continued from page 101)

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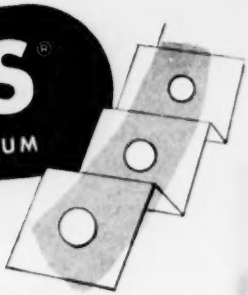

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Therapeutically adequate oral dosage by means of Soltabs is actually only a small amount of penicillin by weight; for infants, the average clinically effective dose is one 100,000 unit Soltab, dissolved in two ounces of formula, given at intervals of three to four hours.

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*Keefer, C. S.: Evaluation of Antibiotic Therapy, Postgrad. Med. 9:101 (Feb.) 1951.

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THYREOTOXIKOSEN UND ANTITHYREOIDALE SUBSTANZEN *by* Hans Wilhelm Bansi. 99 pp., ill. Georg Thieme, Stuttgart. 11.40 DM.

GRUNDSÄTZLICHES ZUR DIABETESTHERAPIE *by* F. Bertram. 40 pp. Georg Thieme, Stuttgart. 1 DM.

DIABETES INSIPIDUS *by* Harry Blotner. 208 pp., ill. Oxford University Press, New York City. $4.50

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Time's Awastin'

My colleague, Dr. Brown over in Murfreesboro, got a call at 2 A.M. the other day from a man obviously in distress who asked the doctor to come immediately to a place about 15 miles out in the country. The doctor dressed quickly and sped to the scene of what he believed must be an accident.

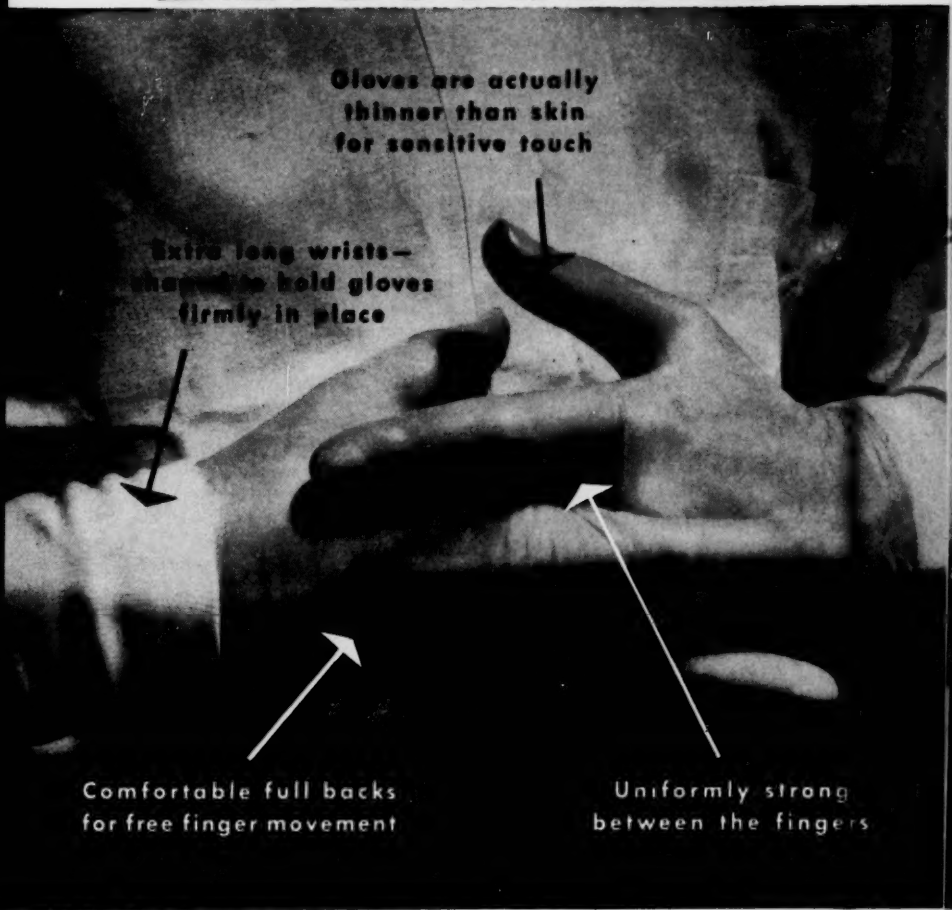
Upon the doctor's arrival the man's first words were, "What is your fee, Doctor?"

In some surprise, Dr. Brown said, "Five dollars."

"Here it is," said the man handing over a bill, "and cheap enough too. The road is so muddy and rough, and the creek rising so fast, that the taxi driver wanted $10 for the trip. But let's get going. I have to catch the 3 A.M. bus!"—E.W.S.

"Where is it, please?"

B.F.Goodrich



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It baffles and annoys me the way some persons will take a busy doctor's time for advice that they straightway ignore. Not long ago I was called out at night to see a patient who wasn't coming along as she should. As she was a parsimonious soul, I had a suspicion that she hadn't had the prescription filled that I had given her. I told her as much.

"Yes I did, Doctor, truly I had that prescription filled," she replied, "but goodness sakes alive, I can't afford to take that stuff. It cost me $9.85!"—G.M.G.

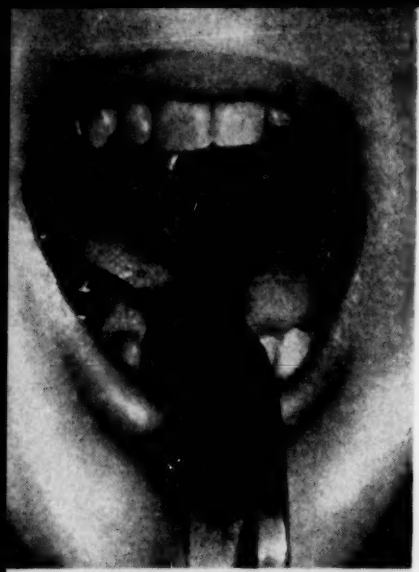
"My wife is feeling much better, Doctor, since I took your advice and fed her wine and necked her."
—H.B.C.

"Be seein' you, Doc."

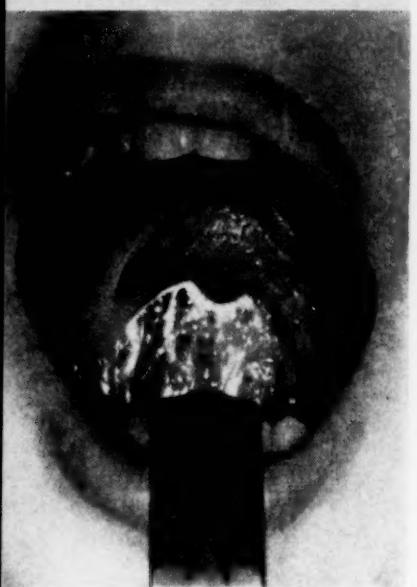
BASIC DIAGNOSIS

A is plagued with acidosis,
B can boast of pneumatosis;
C is troubled with gastritis,
D has ileocolitis;
E is subject to dyspepsia,
F complains of dysorexia;
G admits to peptic lesions,
H has enteric adhesions;
I . . . well, here's the stand I take;
I've just got the bellyache!

—M.H.P.



Pharynx before administration of Paredrine-Sulfathiazole Suspension



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sore throat

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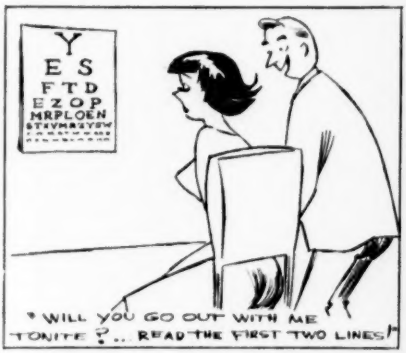
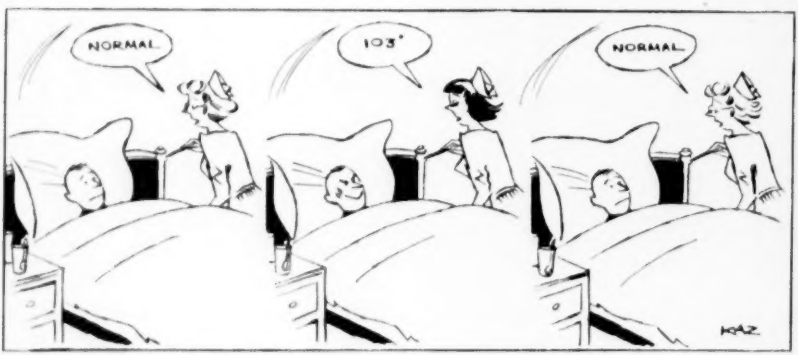
Nellie Nifty, R.N.

by kaz





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[1] Harrison, T. R., Pilcher, C., and Ewing, G. J.; Clin. Investig., 1930—V8, 325.

[2] Barker, M.D., W. Halsey, John Hopkins Univ. School of Med., Med. Clin. of N. Am., March, 1945.

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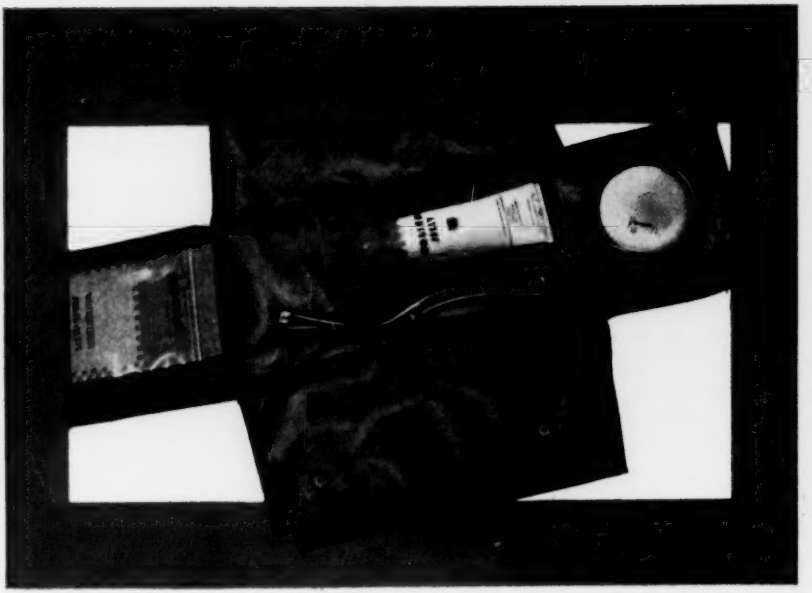

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1. Weisman, A. I.: Spermatozoa and Sterility. New York, Paul B. Hoeber, Inc., 1941; p. 257. 2. Clark, Le M.: The Vaginal Diaphragm. St. Louis, The C. V. Mosby Company, 1939, p. 18. 3. Report of a leading fertility and sterility clinic. *The word "RAMSES" is a registered trademark of Julius Schmid, Inc. †The words "TUK-A-WAY KIT" constitute a trademark of Julius Schmid, Inc. ‡ACTIVE INGREDIENTS: Dodecaethyleneglycol Monoleurate 5%; Boric Acid 1%; Alcohol 5%. "RAMSES" Vaginal Jelly is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. The "RAMSES" Vaginal Diaphragm and Diaphragm Introducer are accepted by the Council on Physical Medicine and Rehabilitation of the American Medical Association.

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*Wilbur, D. L.: Principles in the Use of Vitamins in Treatment: I. Vitamin Deficiency Diseases. Gastroenterology, 1:179, Feb., 1943.

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